AR HITECTURAL RECORD

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INDUSTRIAL
BUILDING TYPES STUDY



GRINNELL Ceiling-Type SPRINKLERS

When the management of Rich's, Inc., decided to construct its new department store "downtown" in Knoxville, it was a momentous decision—one taken in the face of a strong, continuing move to the suburbs. But experience has proved the wisdom of that action.

Of course, no small factor in the success of Rich's new store were such design innovations as a 450-car attached garage; outside pool and planting strip; and a built-in warehouse. The installation of Grinnell Sprinklers was still another move taken to create a relaxed atmosphere and to build customer confidence. Grinnell Ceiling-Type Sprinklers are unobtrusive. They do nothing to mar the decor of modern interiors. And yet, should fire occur, they operate quickly. automatically to strike fire at its source, anywhere - anytime, night or day. Moreover, they make impressive insurance savings possible.

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Rich's Department Store in downtown Knoxville. Long, corrugated canopy of concrete heightens the dramatic quality of brick and glass construction.







Modern lighting and automatic ceiling sprinklers give a clean, uncluttered appearance to various departments.

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PROTECTION AGAINST EVERY FIRE HAZARD



Manufacturing, Engineering and Installation of Automatic Sprinklers Since 1878 -

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pedestrian and parking traffic enjoy summer surfaces during winter snows

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Designers of beautiful Mellon Square Park and Garage did a lot of thinking about snow removal. The location and function of the new park and garage demanded year-around utilization. To meet the need, a wrought iron pipe snow melting system was installed in the walks and steps of the park area, and all drive-

way ramps leading into and out of the garage. The result—safe walking surfaces for pedestrians and skid-free access ramps for the parking traffic. More than four miles of corrosion-resistant wrought iron pipe was used. This time-tested material was also used for soil, waste, and vent lines in the garage.

Our bulletin, Wrought Iron Pipe for Snow Melting Systems, gives complete information. Write for a copy.

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MITCHELL & RITCHEY, Architects, Pittsburgh, Pa., designed the park, and were associate architects on the garage structure.

HARRY DOUGHERTY & SONS, Freeport, Pa., handled the park snow melting contract.

LANGDON & KASCHUB, Pittsburgh, Pa., installed the garage snow melting system.

BYERS

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ELECTRIC FURNACE QUALITY STEEL PRODUCTS

ARCHITECTURAL RECORD

February 1956 Vol. 119 No. 2

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COVER: Price Tower, Bartlesville, Okla.; Frank Lloyd Wright, Architect; Joe E. Price, Photographer

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ELEGANT Eden Roc





'INCOR' REDUCED CONSTRUCTION TIME BY 25%, SAVED \$30,000 IN CONCRETING MIAMI BEACH'S NEWEST LUXURY HOTEL

• This year's big news in the wintertime vacation capital is luxurious new Eden Roc Hotel. Blending modern design with the warm beauty of the classical, this \$10-million, 14-story, 401-room hotel embodies the utmost in comfort and luxury. Each room, furnished, represents a total cost of \$29,000, said to be the highest in the world.

From tropical gardens to top of tower, tallest in Miami Beach, the Eden Roc is outstanding in every detail. Equally outstanding was the contractor's performance in completing this staunch, firesafe structure with its far-from-simple design in record time.

Drawing on many years' experience with concreteframe erection, the Taylor Construction Company went onto a high-speed 'Incor' schedule on June 15th, topping the structure out September 14th—14 floors concreted in 13 weeks!

A total of 22,000 bbls. of 'Incor' 24-Hour Cement was used, and the Contractor estimates resulting savings of \$30,000 on forms and $25\,\%$ in construction time, with corresponding reduction in overhead costs.

Typical 'Incor'* performance, in a building as noteworthy for structural quality as it is for the elegance of its every external aspect. *Reg. U. S. Pat. Off.







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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 18 MODERN MILLS, 38,000,000 BARRELS ANNUAL CAPACITY



The World's Finest Bathroom Fixtures installed in fabulous new Sutton House

Designed by Kokkins & Lyras, New York architects, the beautiful Sutton House is a distinctive group of three apartment buildings which add new prestige and glamour to the residential area of Sutton Place South. It offers the latest and finest accommodations for gracious living. And in each of the sparkling bathrooms of Sutton House you'll find smart, new U/R fixtures.

55 Years of Fine Fixture Making

Yes, all over the country the trend is to Universal-Rundle—maker of the first colored bathroom fixtures. For two generations U/R craftsmen have pioneered new designs . . . new features which make Universal-Rundle the world's finest bathroom fixtures. Finest, because U/R white fixtures are the whitest by actual test. Finest, because the pieces in a U/R color suite are color-matched closer than the eye can see, Finest because their surfaces are harder than steel for those extra years of service. Architects and builders are invited to write for the catalog showing the complete line. See the U/R listing in Sweet's Architectural and Light Construction Files.

NEW-STYLED FIXTURES for home, institutional, commercial and industrial use.



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Plants in Camden, New Jersey; Milwaukee, Wisconsin; New Castle, Pa.; Redlands, California; Hondo, Texas

THE RECORD REPORTS

PERSPECTIVES

Two cars for every garage is not a slogan but a prospect to conjure with these days, and Universal C.I.T. Credit Corporation, the nation's largest independent automobile financing firm, says the building industry should consider the two-car garage or carport the standard for any new rural or suburban home. The company's expectation is that nearly 7,500,000 American families will be in the "multiple-car class" by 1960; it says the growth in the number of "prime prospects" for a second car is "one of the brightest expectations in the future automobile market." In 1955, 4,500,000 families had more than one car, compared with 1,100,000

GENERAL MOTORS GETS THE POINT: "I see no reason," said GM Vice President Roger M. Kyes recently, "why we should not have two-refrigerator families as well as two-car families." Mr. Kyes, who felt that about 10 million two-refrigerator families would not be an unrealistic goal, expected some of the impetus toward it to come from "dynamic obsolescence," a state he explained is achieved by bringing out new and improved models every year, as the automobile industry does, and thus persuading the customer that "he is better off investing in the new product, compared to keeping his money in the savings bank and struggling along with the old." Mr. Kyes, who said the appliance industry over the next decade or so could become as important a factor in the economy as the automobile industry, also predicted that 60 per cent of American homes will be air conditioned by 1965 (today's figure for central home air conditioning systems is about one per cent) and foresaw "tremendous things on the horizon" through advances in electronics, atomic energy and other fields of technology: "We have hardly begun to explore the possibilities for making the American home truly a good place to live in."

Two bathtubs for every home: That most famous son of Paris, Ill., William Zeckendorf, met his match last month in an earnest gentleman who spoke up from the audience at New York's Cooper Union, where Mr. Zeckendorf had given the second in a current series of lectures on "How to Build a Better-Looking New York." Mr. Zeckendorf's comments were, not unnaturally, devoted to the latest (and of course the biggest) project of his firm of Webb & Knapp to improve New York - the proposed \$500 million, 40-acre West Side Redevelopment Project (see page 48). In the question period that followed, he was his usual genial, imperturbable self with all of the heterogeneous questioners who turn up for Cooper Union's free lectures until there came the boobytrap. "Mr. Zeckendorf," said the earnest gentlemen, "a lot of people don't even have a bathtub. Do you think it's right to spend all this money on a project like this when some people still don't have bathtubs?" The audience laughed, and Mr. Zeckendorf smiled. faintly and - it first appeared imperturbably, but all he said was, "You can use one of my bathtubs."

AND SWIMMING POOLS BOOM: a record total of \$325 million will be spent for new pool construction and equipment in 1956, according to the annual market study of the trade publication Swimming Pool Age. "New construction in 1956 alone will more than triple the total number of pools existing in the U.S. up through the end of 1945," according to the publication, which reports its survey revealed only 8000 pools had been built in this country by the end of World War II. In 1955, the previous record year for swimming pools, approximately 20,000 pools were built at a cost of \$220 million. Main factor underlying the boom, says Swimming Pool Age, has been lower cost, reflecting keener competition, new building methods and new types

of pools. Most common material for permanent installations is concrete, followed by steel, plastic and aluminum. Of 56,000 existing pools, residential pools comprise 35,000 of the total, with approximately 8800 in "Y's", schools, hotels and motels; 7400 municipally owned; 3600 private club pools; and 1200 commercial pools. Of the 20,000 pools built in 1955, 80 per cent were paid for in cash, but Swimming Pool Age notes that the "potential that can be opened up by installment financing is tremendous"!

ALSO AVAILABLE: dinosaur footprints on slabs of stone quarried from the South Hadley, Mass., premises of the C. S. Nash Dinosaur Foot-Print Co., sometimes (as on the company's letter-head) known as "Dinosaurland." A company leaflet called "Petrified Footprints for Moderns" suggests varied applications: "Add these fascinating and humorous conversational pieces to your fireplace, terrace, garden walk, bird bath, or use for novel book ends, ash trays, paper weights, door stops." How it began: "Carleton Nash, a young geologist, discovered a stony ledge in South Hadley, Massachusetts, which contained 'some imprints' left by the ponderous pre-historic dinosaurs that dominated life on this planet during this early geological period. After completing studies in geology at Amherst college, and several misfortunes, he purchased the area containing his secret find." And now, the company's stationery proclaims it "Furnishers of Tracks" to a list of customers that ranges from Lowell Thomas and Gene Autry to the Northwest Mounted Police (Saskatchewan, Canada) and the Notre Dame Band. Says the dinosaur, to quote "Petrified Footprints" once more: "Come with me; this may be our final visit, for with our going now we may not come again. We have left our foot-prints indelibly on the 'Sands of Time'."

THE RECORD REPORTS BUILDINGS IN THE NEWS



VINCENT KLING DESIGNS AN OFFICE CAMPUS FOR MONSANTO

The new general headquarters of the Monsanto Chemical Company will be built on a 252-acre site in Creve Coeur, St. Louis County, Mo. Monsanto explains that this should not be regarded as a move away from St. Louis, but rather as an expansion of its activities in the St. Louis area; expansion programs will continue at the two large manufacturing plants Monsanto operates in the City of St. Louis itself.

The headquarters development at Creve Coeur (model photo above, site plan below) will be comprised of three general office buildings, an executive building (one-story building in photo) and a utility building (not shown); Vincent G. Kling of Philadelphia is the architect. Also on the Creve Coeur site, Monsanto will build a laboratory for its Inorganic Chemicals Division which it is promised will incorporate the largest application of plastic building materials ever used in a single project; Holabird & Root & Burgee of Chicago are the

In the headquarters scheme, the desire was to avoid high-rise buildings and to provide parking for employes reasonably close to their work destinations, also to take full advantage of the country setting. So there will be a group of buildings around a garden center, with peripheral parking areas, also landscaped. Interlocking tunnels beneath the campus will take care of personnel circulation in bad weather; they will also serve for distribution of supplies and to house utilities lines.

The shape of the buildings was determined by Monsanto's wish to avoid the "bullpen" kind of office area without sacrificing efficient use of space. The bar of the H is both a receiving center, with employes' and visitors' entrances on opposite sides, and a service core, containing stairs, elevators, toilets, etc.

The mechanical penthouses atop the three main buildings have been designed with an effort to give some visual ele-

gance to structures bound to be so prominent on low buildings; their positions relate them to those building areas having the heaviest mechanical runs, and they will be lifted two ft above the roof level so air can be admitted from beneath them, thus eliminating the need for exposing unsightly equipment.

Construction will be a cellular steel structure, with Monsanto plastics used, in the architect's words, "for all prudent applications." According to present plans, there will be a good many of these, including exterior finishes, flooring, wall covering, partitioning, acoustic treatment, paint and some piping.

Exteriors will combine panels composed of double sheets of glass separated by a gray-green plastic laminate, for sun, glare and heat control, and greenblue glass-on-steel panels (fused hightemperature glazing on steel), with base and retaining walls of Missouri stone of an earthy Indian-red color.

The executive building will be a plastic-coated concrete structure with a shell roof over its major fixed space (containing lobby and board room).

Cost of the headquarters project is estimated at \$7.5 million. Approximately 300,000 sq ft of floor space will be provided. Occupancy is set for late



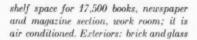
EIGHT BUILDINGS GIVEN 1955 GULF STATES A.I.A. AWARDS



FIRST HONOR AWARD went to Ensley Branch, Birmingham, Ala., Public Library; Shaw & Renneker, architects.

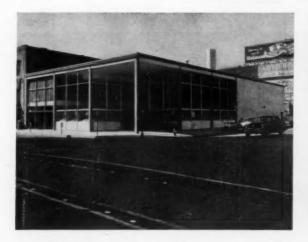


The building, which cost \$84,413 including shelving and furniture, is 100 ft by 60 ft, has assembly room for community use,





FIRST MERIT AWARD was given for the Richardson residence, Harahan, La.; Curtis and Davis, architects-engineers, Walter J. Rooney Jr., associate in charge



MERIT AWARD — the only store to receive one was (above) Riders Jewelry Store, Balon Rouge, La.; A. Hays Town, architect



MERIT AWARD — LiRocchi Building, Balon Rouge; Short & Murrell, architects. Rental offices for two tenants; cost \$20,000

THE RECORD REPORTS BUILDINGS IN THE NEWS

(Continued from page 11)



MERIT AWARD — Medical Office Building, Montgomery Ala.; Donald L. Horton & Albert L. Williams Jr., architects

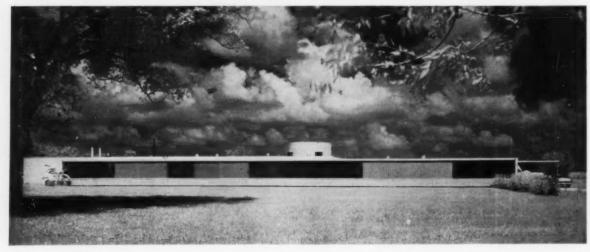


MERIT AWARD — First Presbyterian Church, Arkadelphia, Ark.; Ginocchio, Cromwell and Associates, architects

MERIT AWARD — St. Bernard Methodist Church, New Orleans; Dinwiddie, Lawrence and Saunders, architects. Chapel and social hall (right) are first phase of complete program for church in new neighborhood. Cost: \$31,889



MERIT AWARD - St. James Parish Hospital, Luther, La.; Curtis and Davis, architects-engineers



(More news on page 15)

An Important Scientific Contribution

by the National Bureau of Standards

A Law of Appreciating Returns

The Law of Diminishing Returns in Heat Resistance, which affects so many building materials, has been found to be offset by a Law of Appreciating Returns which applies to parallel, reflective spaces.

The *importance* of this LAW will be felt in terms of winter and summer comfort in every kind of building, in fuel conservation, air-conditioning, cold storage. The practical and simple application of this LAW, at very low cost, will be about 8¢ per sq. ft. area of top floor ceilings and outer walls.

The findings of H. E. Robinson and F. J. Powlitch, under the direction of R. S. Dill, all with the National Bureau of Standards, were recently published by the Housing and Home Finance Agency in a booklet entitled "The Thermal Insulating Value of Air Spaces, Housing Research Paper 32."

Their findings show that for heat flowing *up* and *laterally*, successive reflective parallel air spaces, follow a law of appreciating returns.

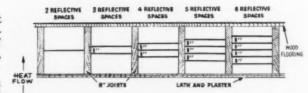
THE EXPLANATION OF THE LAW

If the *temperature difference* between bounding surfaces in an air space is decreased, there follows a significant decrease in convection, which is particularly important in up and lateral heat flow.

Such decrease can be attained, for instance, by dividing 8" ceiling joist spaces with aluminum sheets so they form successive reflective air spaces.

Here's a simple experiment! Assume the depth of one 8" joist space is divided in half by an aluminum sheet; another such space divided in 3 parts by 2 such sheets centered 1" apart; the next space divided in 4 parts with 3 sheets; the next in 5 parts with 4 sheets; another in 6 parts with 5 sheets.

Assuming the original 8" space has a temperature difference of any fixed amount, the more the space is divided, the greater is the division of the



original spread of temperature; so EACH SPACE CARRIES A SMALLER BURDEN OF TEMPERATURE DIFFERENCE. There follows a decrease in convection and a corresponding significant increase in the insulating value of the spaces. This holds true down to space depths of about 1", below which the diminution in insulating value due to increase in conduction because of lessening the depth, becomes the controlling factor.

It was found that each 1" reflective space where the joist-space was divided in 6 parts, had greater insulating value than each 1" space where the joist-space was divided in 5 parts; which in turn had greater value than each 1" space where there were 4 subdivisions, etc. The total insulating value in an 8" joist space of 6 such reflective spaces was more than twice that of 3 such spaces, more than 50% better than 4 such spaces.

The Thermal Factors below were calculated by Infra engineers, with the use of Research Paper 32. The ceiling joist space was taken as 75/8" deep; wall stud space 35/8"; floor joist space 95/8". For 5 and 6 space side heat flow, 55/8" stud space was used. The roof was taken as asphalt shingles or roll roofing on 25/32" solid wood sheathing. Air temperatures were assumed as follows:

	Heat Flow	Inside Temp. °F	Outside Temp. °F	Mean Temp. °F	Temp. Diff. °F
Walls	side	70	0	35	70
Ceilings	up	80	10 (attic)	45	70
Ceilings	down	90	120 (attic)	105	30
Floors	down	65	30	48	35

THERMAL FACTORS FOR PARALLEL REFLECTIVE AIR SPACES

(In Btu per sq. ft., per hour, per degree F)

Where Dividing Media are ALUMINUM with .03 emissivity, and PAPER, spaced 1" apart.

Calculated on the basis of work done by the NATIONAL BUREAU OF STANDARDS

For Housing & Home Finance Agency's Research Paper No. 32

		UP-HEAT			DOWN	I-HEAT		SIDE	HEAT
Number of REFLECTIVE SPACES	FACTOR	FACTOR Attic Floor (roof excluded)	FACTOR Ceiling & Roof (unfloored attic)	FACTOR	PACTOR Attic Floor (roof excluded)	FACTOR Ceiling & Roof (unflopred attic)	FACTOR Floor over Crawi Space	C FACTOR Wall	C FACTOR Wall
4 REFLECTIVE SPACES 2 aluminum sheets 1 paper sheet %" apart	.106	.084	.082	.035	.032	.032	.039	.069	.057
5 REFLECTIVE SPACES 3 aluminum sheets 1 paper sheet 1" apart	.082	.068	.066	.031	.029	.028	.033	.051	.044
6 REFLECTIVE SPACES 3 aluminum sheets 2 paper sheets 1" apart	.067	.058	.056	.029	.027	.027	.028	.043	.038

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meets every hospital flooring need - with the rare "plus" of cheerful styling

Upper Manhattan Medical Group, Health Insurance Plan Clinic New York, N. Y. Associated Architects: George Nemeny, Abraham W. Geller, Basil Yurchenco General Contractor: Adson Builders, Inc. Flooring Contractor:

Sidney Fenster, Inc.



Widely acclaimed, New York's Upper Manhattan Medical Group Clinic integrates the highest standards of architecture, function and decor in an ideal union . . . in which MATICO Confetti tile is an essential specified element.

It's easy to see why more and more architects are specifying MATICO Confetti Tile Flooring for hospital projects.

Basically, it's because Confetti satisfies every need, every rigid requirement of the modern hospital. First, it is sanitary, durable and quietly resilient. But more than that, it is also fire-resistant and low in cost for both installation and main-

tenance. And, in addition to all these utility values, Confetti's gay dots-of-color styling lends new charm and cheer where past custom dictated hygienic coldness.

- Good reasons, all, why you can specify Confetti tile flooring not only with confidence, but with justifiable enthusiasm, in your next hospital project as well as other types of projects.



Architects planned the pharmacy as a "display piece" near the Clinic's entrance, where it can be seen through a wall of glass. Here, too, Confetti in white with black mottle was specified.

In these light and lifting circulation areas the Confetti floor of white with black mottle contributes to the air of buoyancy and lightness. Even under heavy traffic conditions Confetti's bright colors last and last.



In this intimate waiting room, the decor is one of colorful furnishings, restful lighting and more of MATICO'S airy, bright Confetti flooring.



In consultation rooms for doctors and patients Confetti was specified also - this time in black with white mottle. (In addition, Confetti is also available in nine other color combinations).

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The State of Construction

More new records - latest figures from F. W. Dodge (see page 376) set new dollar highs for the month and for the year 1955, thus winding up the tenth succesive year of new record volumes. Not only the total for the month but the nonresidential and heavy engineering categories set new records; residential contracts, off seven per cent for the month, reached the second highest December total on record. . . . On the subject of residential construction, Dodge economist Dr. George Cline Smith, addressing the convention of the National Association of Home Builders in Chicago last month, noted that contract awards for construction of single-family homes in the 37 eastern states have almost exactly doubled in the past four years. Doctor Smith pointed out that total figures on housing starts or valuation tend to obscure the rapid growth in single-family homes, because of an off-setting decline in multifamily buildings. He pointed out that the \$8.5 billion total of contract awards for single-family houses reported by Dodge in 1955 represented a gain of 21 per cent over the previous record set in 1954 and an increase of 97 per cent since 1951, whereas the increase for total residential building from 1951 to 1955 is only 64 per cent. Doctor Smith thought the "absolute minimum" figure for housing starts in the next ten years would be 12 or 13 million; he said that, even though the number of 1956 nonfarm housing starts is expected by Dodge to drop about 10 per cent from 1955, the dollar volume should be supported at a high level by the trend toward "larger and more expensive homes."

Los Angeles, May 15-18

The Southern California Chapter of the American Institute of Architects plays host to the Institute's 88th annual convention at the Hotel Biltmore in Los Angeles May 15-18; and the host chapter committee headed by Charles O. Matcham is by now bursting with plans to exploit this role to the greater glory of its proud locale and the greater pleasure of convention visitors. From Washington, A.I.A. convention manager Arthur B. Holmes reports preliminary plans for the 88th are well under way. This year's convention special train will be assembled at Chicago for a highly scenic trip to Los Angeles via Grand Canyon. There will also be a convention special returning to Chicago; but the major post-convention tours will go to Hawaii and Japan. "Architecture for the Good Life" is the convention theme; it will provide the general framework for the major addresses and the seminars. Members of the host chapter committee, besides Mr. Matcham: guidebook - Douglas Hon-

nold; publications and program - William Schinderman; tours - Cornelius M. Deasy; budget and finance - Herbert Powell: reception and hospitality - Samuel E. Lundin; exhibits - George E. Russell: public relations — Ulysses Floyd Rible; cultural events - John Rex; Western gala show - Charles Luckman; reservations and tickets - Henry Wright: symbol and competition - Francis Merchant: allied professions - John Landon; transportation - Robert Field; decorations - Paul R. Hunter; student activities - Edward Fickett: women's activities - Mrs. Stewart Granger: Orange County Chapter chairman - Gates Burrows; Pasadena Chapter chairman -Wallace Bonsall; and ex officio - A.I.A. first vice president Earl T. Heitschmidt and regional director Donald B. Kirby.

Mysterious California

The way California manages to walk away with what sometimes seems like "most" of the awards in the A.I.A. Honor Awards Program every year has been the talk of many an A.I.A. convention. (Actually, it's not as bad as it may appear: of 22 First Honor Awards and 109 Awards of Merit in the first seven years of the program, the Californians accounted for seven of the former and 58 of the latter.) How do they do it? Well, one statistic out of the Eighth Annual Honor Awards Program, for which registration closed last month, is at least suggestive: of some 250 entries, an even 100 this year come from California.

British Honor Gropius

The 1956 Royal Gold Medal for Architecture has been awarded by Queen Elizabeth II to Walter Gropius. The former chairman of the Department of Architecture of Harvard's Graduate School of Design and founder of the Bauhaus will go to London in April for the presentation ceremonies. The award is made on recommendation of the Royal Institute of British Architects and is the British equivalent of the A.I.A. Gold Medal, the Institute's highest honor.

Worth the Winning

Aluminum Company of America and the National Association of Architectural Metal Manufacturers are co-sponsoring a competition with prizes totaling \$25,000 to uncover new design and construction ideas for aluminum curtain wall buildings. The com
(Continued on page 16)



- Drawn for the RECORD by Alan Dunn

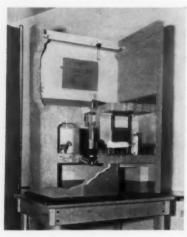
THE RECORD REPORTS

MEETINGS AND MISCELLANY

(Continued from page 15)

petition, with 18 prizes ranging from \$10,000 to \$500, is open to architects, designers, draftsmen and students in the United States and Canada. Paul Schell, A.I.A., of Pittsburgh is professional adviser; jurors, all members of the A.I.A., will be Max Abramovitz of New York, Kenneth Franzheim of Houston and Sigurd Edor Naess of Chicago. Closing date is March 26. Programs from: Paul Schell, c/o National Association of Architectural Metal Manufacturers, 228 North LaSalle Street, Chicago 1, Ill. . . . The Society of the Plastics Industry Inc. has announced a \$3250 house design competition open to architects, designers, draftsmen and students. Wanted: ideas for new uses of plastics, in house construction and builtins, which provide "increased livability, comfort, safety and value." Prizes range from \$1000 to \$100; there will be special prizes for "feature areas" utilizing plastics - porch or outdoor living area, kitchen-breakfast area, bath-dressing room and children's or adults' playroom. Judges will be architects Paul Rudolph of Sarasota and John Highland of Buffalo and editor Hiram McCann of Mod-

MEDICAL RESEARCH REACTOR— Preliminary design made by Nuclear Development Corporation of America in cooperation with Brookhaven National Laboratory developed many features to be included in the medical research reactor to be built at Brookhaven (AR, Jan. 1956, page 12). In cutaway model photo below, patient treatment room is at right, animal experimental room at left, reactor core between; design provides for safe operation of the reactor in populated areas



which closes May 1, has been approved by the A.I.A. Committee on Architectural Competitions. Details from: James T. Lendrum, A.I.A., professional adviser, SPI Plastics House Competition. Mumford House, University of Illinois, Urbana, Ill. . . . The Government of the State of New South Wales will hold an international competition for a new National Opera House in Sydney, Australia. "Assessors," or judges, are Eero Saarinen of the U.S.A.; Henry Ingham Ashworth and Cobden Parkes, of Sydney; and John Leslie Martin of London. Three winning designs will receive prizes amounting to nearly \$18,-000 - 5000 Australian pounds for first prize, 2000 for second and 1000 for third. Competitors must register by March 15, enclosing a remittance of 10 Australian pounds or its equivalent, with the Secretary and Executive Officer, Opera House Committee, Department of Local Government, Bridge and Phillip Streets, Sydney, Australia. . . . Harvard University's Graduate School of Design, Department of City Planning and Architecture, Cambridge 38, Mass., announces a new scholarship, or scholarships, totaling \$1200, from the Alfred Bettman Foundation for the year 1956-57 for graduate studies in city or regional planning, for a student or students accepted for admission or already enrolled in the Department. Recommendations will be made to the Foundation on the basis of admissions approved prior to April 1. . . . The School of Architecture and Planning of the Massachusetts Institute of Technology announces establishment of a research fellowship of up to \$1200 by the New York architectural firm of Voorhees Walker Smith & Smith, through the American Architectural Foundation. The fellowship will be awarded to a graduate student in the Department of Architecture or the Department of City and Regional Planning who submits "an acceptable program of research in the general field of neighborhood needs and planning." Proposals must be submitted before April 1 to Pietro Belluschi, dean of the School of Architecture and Planning, M.I.T., Cambridge 39, Mass. . . . The Rice Institute invites applications not later than March 1 for graduate assistantships and fellowships in architecture for the academic year 1956-57. Assistantships require not more than eight hours of laboratory teaching and carry a stipend of \$1300; fellowships have a stipend of \$400 and remission of all fees.

ern Plastics Magazine. The competition,

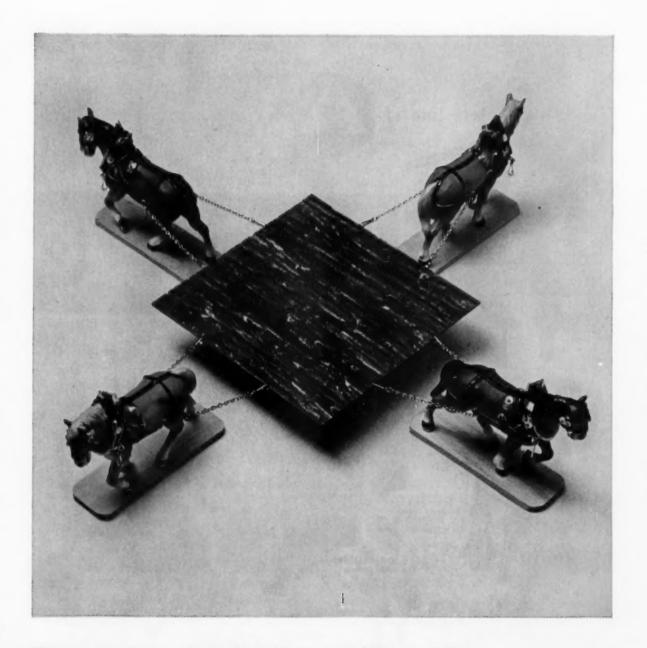


EARTH SATELLITE—One man's guess at a very early precursor of interstellar architecture: model built by associate editor Herbert R. Pfister of Popular Science Monthly puts simulated instrumentation (standard subminiature electronic parts were used) inside plastic shell 18 in. in diameter; total weight, 25 lb. In the photo, satellite stands on "truncated third-stage rocket," Popular Science Monthly explains, as it might in actual flight. Model, which was displayed at Hayden Planetarium in New York, was built after consultation with scientists responsible for U. S. program

Candidates must be architectural school candidates with a professional degree. Applications should be addressed to the Department of Architecture, The Rice Institute, Houston 1, Tex.

Students in Britain

Almost as the first meeting of the new U. S. student organization, the Architectural Student Forum, was being held in Washington, D. C., under the sponsorship of the American Institute of Architects, came the announcement of the formation of the National Association of Architectural Students (of Great Britain). Objects, according to the Journal of the Royal Institute of British Architects, are "to link architectural students and affiliated societies, to act on behalf of architectural students in student matters, and to further architectural education by providing facilities as desired by the members." The Association, which invites dues-paving members on either a school or an individual basis, is organized in four regions-North, South, West and Midlands and hopes, in lieu of a publication of its own for the present, to arrange for some



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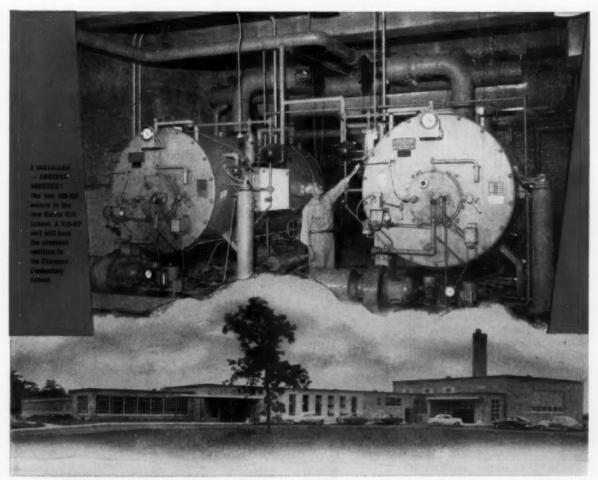
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THE RECORD REPORTS

MEETINGS AND MISCELLANY

(Continued from page 16)

space in the established architectural journals. The Association's first annual congress is scheduled for next summer in London, and plans also include participation in international architectural student activities.

Art for Architecture

José de Rivera and Hans Hofmann have been commissioned to decorate the vestibule and lobby of William Kaufman's new office building at 711 Third Avenue, New York City. The building, designed by William Lescaze, will be completed in April. For all four walls of the building core that houses the elevators, and was designed as an island. Hans Hofmann has created a group of abstract murals in great splashes of color. The whole design will be translated into mosaic by the house of Vincent Foscato and will be installed under Mr. Lescaze's supervision. De Rivera has fashioned a unified design in two separate pieces of stainless steel which has been named "continuum." The two pieces will be hung over an area of about 50 sq ft on a contrasting dark stainless steel wall. . . . Another sculpture by José de Rivera has just been mounted in a patio of the Dallas Statler Hotel, William Tabler, architect. It is a large stainless steel piece painted chrome yellow inside and is on a revolving stand with water cascading below it into a rectangular pool. . . . For another office building in New York City sculptor Costantino Nivola has executed a relief to go into an office wall. The new building at 545 Madison Avenue was designed by architect Herbert Fischbach and is nearing completion. . . . Also of interest will be an exhibit at the Grace Borgenicht Gallery designed to tell the story of "Sculpture and Architecture." The show will run from February 13 to March 3. . . . In architect James Sudler's United States National Bank Building, part of Mile High Center, Denver, Colo., there will be three free standing panels of vitreous enamel designed by Peter Ostuni. The colorful seven-ft high panels, one a large abstract painting in blues and the others, two smaller abstract designs, one in hot reds, oranges and browns, the other in deep variations of greens, will be framed in brass and will "float" between two brass rods going from floor to ceiling. The panels will act as space dividers between the working and banking areas. They will be installed this spring.

(More news on page 22)



ARCHITECTURAL PHOTOGRA-PHERS (caught, for once, in front of the camera, above) voted the four photo-

graphs below the best among 200 displayed at their recent convention in New York. Top — (left) M.I.T.'s Kresge Auditorium, by Joseph Molitor of Ossining, N. Y. (Eero Saarinen, architect); (right) Bloomingdale's, Fresh Meadows, L. I., N. Y., by Sigurd Fischer, Point Lookoul, L. I. (Voorhees Walker Smith & Smith, architects). Center — Hunterdon, N. J., Medical Center, by Lawrence S. Williams, Upper Darby, Pa. (Vincent Kling, architect). Bottom — Maryland University Field House, by Robert C. Laulman (Hall Border and Donaldson, architects).

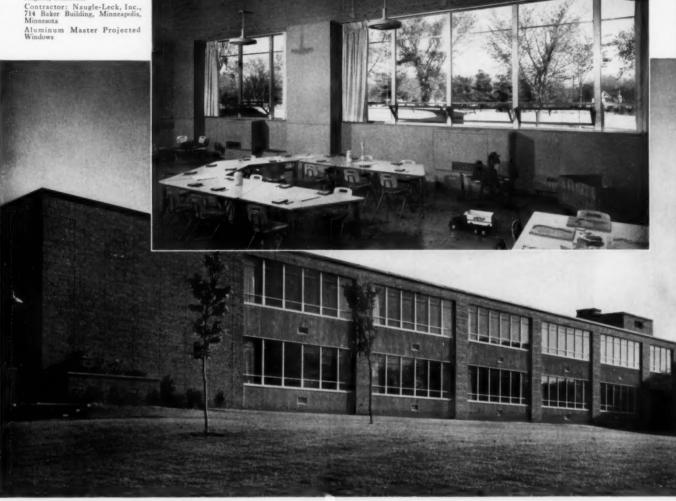








Mt. Zion Hebrew Temple & School, 1300 Summit Avenue, St. Paul, Minnesota Architect: Eric Mendelsohn, Los Angeles, California



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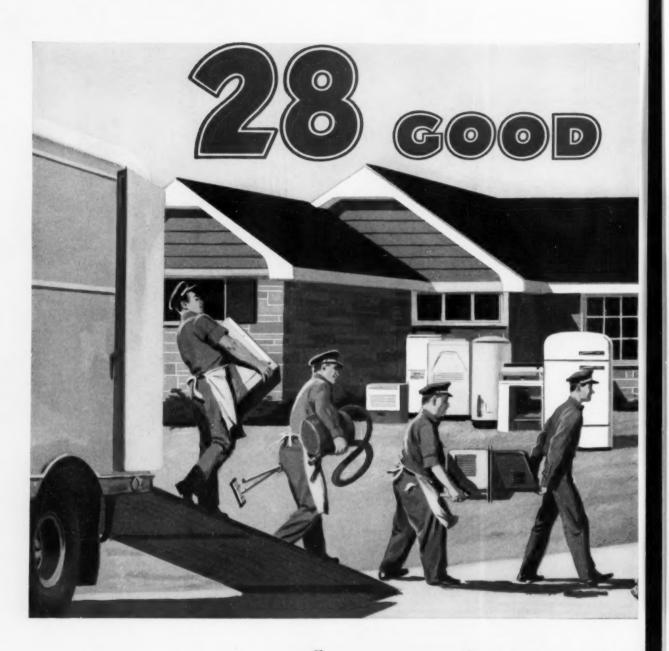
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Sources for Architects: I

A WIDE VARIETY OF PERIODICALS TREAT THE PROBLEMS OF INDUSTRY

Considering the volume of periodical literature serving industry, there ought to be very few new developments not covered in at least one of them. The RECORD has attempted to survey some of those which might be useful to the architect who is concerned with the design of industrial building; the list below was limited perforce to the more general magazines, while those dealing with specific industries - e.g., the chemical, steel or automotive industries were eliminated. Many of them may interest architects only as references from time to time; others may be of use as continuing reports of new industrial developments.

Journals dealing with the broad questions of production and management include Mill & Factory, Factory Management and Maintenance, and Production. These magazines do report, among other things, information on new plant design—Factory Management and Maintenance carries out an annual program to select "Significant Plants." On the West Coast, Pacific Factory contains editorial matter similar to the national magazines, but of course limits its information geographically.

The current interest in automatic production is reflected in four monthly publications - Automation, Automatic Control, Control Engineering and Instruments and Automation. Of the four, Control Engineering is apparently geared to the automation engineer, and the involved computations may limit its usefulness to the architect. Instruments and Automation is likewise interested in basic developments in equipment. Automation and Automatic Control are, however, more concerned with direct applications of the new developments. In addition to its regular features, Automation also carries a monthly news section and a report from Detroit.

In the field of materials handling there are two monthlies, Flow and Modern Materials Handling, as well as the quarterly Material Handling Illustrated, all of them treating primarily the transportation of materials in the plant. The range of topics in the January issue of Modern Materials Handling, for instance, included articles on automation, automatic signalling and conveyor belts, while Flow devoted its December issue to the safe handling of materials.

22

And speaking of safety, three monthly magazines concentrate entirely on the subject. National Safety News is the official journal of the National Safety Council, and appears, at least in the issue sampled, to interest itself quite extensively in industrial safety. The magazines Safety Maintenance and Production and Occupational Hazards also report on safe production operations.

New industrial equipment is covered in a number of news-type periodicals—the monthly Electrical Equipment, Industrial Equipment News, New Equipment Digest and Production Equipment and the bimonthly Instrument and Apparatus News. The format of all of these periodicals is similar, containing very brief reports of new equipment. Production Equipment publishes longer (though still brief) reports of equipment developments which it considers important.

Among the miscellaneous magazines in the field, Industrial Development, which subtitles itself "The National Magazine of Area Analysis and Business Site Selection," does report news of finished industrial developments. Its chief features, however, range, as in its December 1955 issue, from "When are Taxes Reasonable?" to "How to Survey a Community."

This bibliography lists some of the more pertinent magazines surveyed:

AUTOMATIC CONTROL. "The Applications Magazine of Systems Engineering." Published monthly by Reinhold Publishing Company, New York.

AUTOMATION. "The Magazine of Automatic Operations." Published monthly by the Penton Publishing Company, Cleveland.

CONTROL ENGINEERING. "Instrumentation and Automatic Control Systems." Published monthly by McGraw-Hill Publishing Company, New York.

ELECTRICAL EQUIPMENT. "For Design, Manufacture, Installation, Maintenance of Electrical Products." Published monthly by Sutton Publishing Company, White Plains, N. Y.

FACTORY MANAGEMENT AND MAINTE-NANCE. Published monthly by McGraw-Hill Publishing Company, New York.

INDUSTRIAL DEVELOPMENT. "The National Magazine of Area Analysis and Business Site Selection." Published bimonthly by Conway Publications, Atlanta. INDUSTRIAL EQUIPMENT NEWS. "Original Reporter of What's New in Equipment, Parts, Material—for those concerned with Production, Engineering, Design and Maintenance."
Published monthly by Thomas Publishing Company, New York.

INDUSTRY AND POWER. Published monthly by Industry and Power Publication, St. Joseph, Mich.

INSTRUMENT AND APPARATUS NEWS.
"Instruments, Scientific Equipments, Electronic and Mechanical Components." Published bimonthly by Instruments Publishing Company, Pittsburgh.

INSTRUMENTS AND AUTOMATION. Published monthly by Instruments Publishing Company, Pittsburgh.

MILL & FACTORY. "Management, Production, Engineering, Maintenance." Published monthly by Conover-Mast Publications, Inc., New York.

NATIONAL SAFETY NEWS. Official journal of the National Safety Council. Published monthly by the National Safety Council, Chicago.

NEW EQUIPMENT DIGEST. "Materials, Processes, Designs, Applications, Literature."
Published monthly by Equipment Digest
Publishing Company, Cleveland.

OCCUPATIONAL HAZARDS. "Industrial Safety and Housekeeping." Published monthly by Industrial Publishing Group, Cleveland.

PACIFIC FACTORY, "The Plant Management and Production Magazine of the West." Published monthly by Fellom Publishing Company, San Francisco.

PRODUCTION EQUIPMENT. "News of Machines, Design, Materials, Tools, Methods, Maintenance." Published monthly by Wilson Carr Inc., Chicago.

SAFETY MAINTENANCE AND PRODUC-TION. Published monthly by Alfred M. Best Company, New York.

PRODUCTION. "Mass Production's Own Magazine." Published monthly by Bramson Publishing Company, Birmingham, Mich.

FLOW. "Material Handling—Production, Automation, Packaging, Design." Published monthly by Industrial Publishing Group, Cleveland.

MATERIAL HANDLING ILLUSTRATED. "A Quarterly of Money-Saving Production Ideas." Published quarterly by Industrial Publishing Group, Cleveland.

MODERN MATERIALS HANDLING. Published monthly by Materials Handling Laboratories, Inc., Boston.

(More news on page 26)



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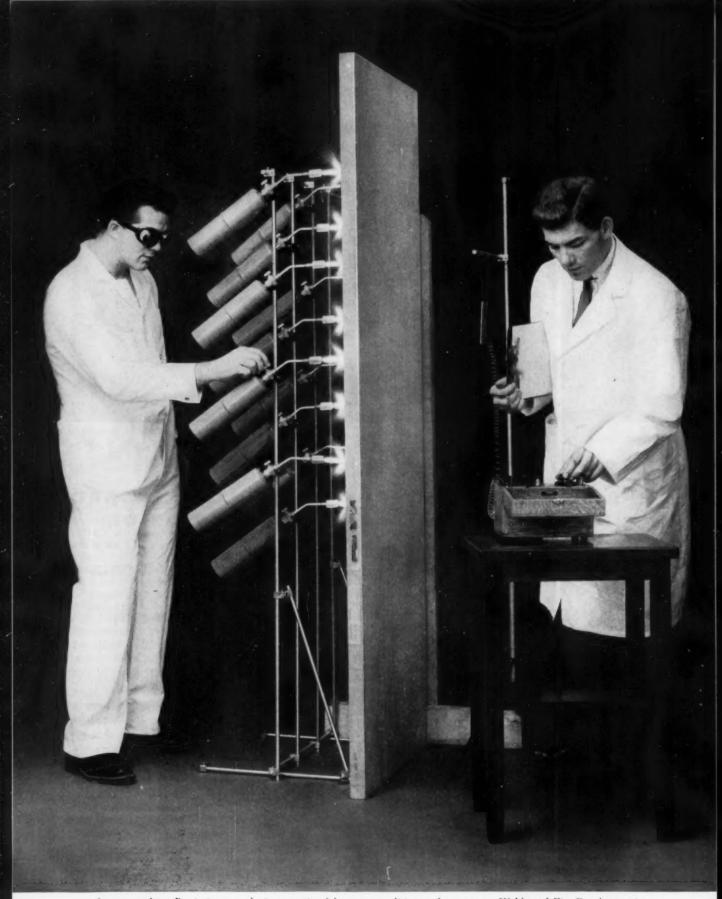
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Famous Stay-Strate* Doors—for interior or exterior use—have the *same* dimensional stability, *same* unconditional guarantee, *same* beautiful hardwood surface, and *same* exclusive Weldrok core.

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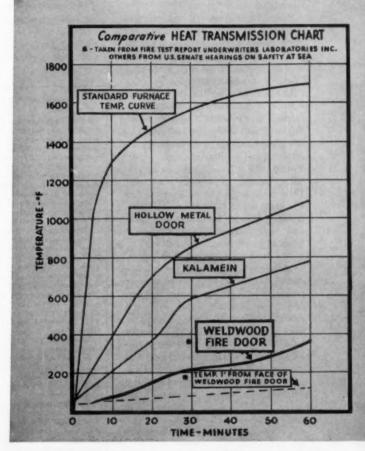
Send this coupon for details on all the famous Weldwood Doors. Or visit any of United States Plywood's 87 branches in principal cities. Remember that Weldwood's Architectural Service Department will be pleased to assist you in any way on your next job. In Canada: Weldwood Plywood, Ltd.



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AR-2-56

COMPANY ______

CONSTRUCTION AND THE STATE OF THE UNION

President Eisenhower's report to Congress last month on the State of the Union contained important references to recommendations he intended to submit on construction subjects.

School and highway construction legislation were mentioned first in a list of "measures of great importance" which the Administration had recommended to Congress last year and which still "demand immediate attention."

In the case of schools, the President referred to the many local and state conferences on education held prior to the White House Conference last fall. The delegates to the national meeting concluded, he said, that the people of the United States must make a greater effort through their local, state, and Federal governments to improve the education of our youth. This expression from the people, he maintained, must now be translated into action at all levels of government.

"So far as the Federal share of responsibility is concerned," the message stated, "I urge that the Congress move promptly to enact an effective program of Federal assistance to help erase the existing deficit of school classrooms. Such a program, which should be limited to a five-year period, must operate to increase rather than decrease local and state support of schools and to give the greatest help to the states and localities with the least financial resources."

Continuation of payments to "Federally impacted" school areas for new school construction and other activities was also asked.

The President told Congress he would recommend a new plan to aid the construction of non-Federal medical research and teaching facilities and to help provide more adequate support for training of medical research manpower. This was to be in connection with his request for a substantial increase in funds for general medical research.

In the housing field, Mr. Eisenhower called upon Congress to provide authority to contract for 35,000 additional units of public housing in each of the next two fiscal years. An Administration effort will be made to persuade Congress to tie the public housing program closely to urban renewal once again, for the message said these additional units were needed "for communities which will participate in an integrated attack on slums

and blight." Congress last year voted to untie the knot which had held the public housing program close to the urban renewal activity.

The President said he would ask Congress to legislate to assist the private homebuilding industry as well as charitable and non-profit organizations in meeting the needs of the growing num-

MORE BUILDING MONEY ASKED IN 1957 BUDGET

The President's proposed budget for fiscal 1957 (beginning July 1) went to Congress last menth recommending \$4.5 billion in expenditures for all Federal public works, a sizeable increase from the \$4.2 billion for fiscal 1956.

Expenditures for military public works and atomic energy construction were expected to decline, but the drop would be more than offset by an increase of \$364 million in civil public works outlays including both direct Federal construction and grant and loan programs.

The increases in Federal-aid expendi-

The increases in Federal-aid expenditures proposed by the White House reflected principally the President's program for assisting states and local communities with school construction. Department of Health, Education, and Welfare expenditures, which include the proposed school sums, were boosted to an estimated \$261.7 million for fiscal 1957 compared with only \$131.7 for fiscal 1956.

The military's public works activity would continue to emphasize further development of those Navy airfields used for training and for operation of jet aircraft and the provision of facilities for berthing and dry-docking the large-type aircraft carriers.

The Air Force will continue construction of strategic and air defense installations, including expansion and modification of the aircraft control and warning system.

The Army will concentrate on construction of anti-aircraft guided missile facilities. Family and troop housing, community facilities, and a moderate amount of replacement construction were included in the services' programs.

Total fiscal 1957 expenditures for the Atomic Energy Commission were estimated at \$301 million.

The budget mentioned again that the President would seek new legislation providing FHA-type loan insurance for construction of medical facilities.

On lease-purchase the budget disclosed that an additional \$250 million worth of building projects were expected to reach Congress for approval by the end of 1957. Fifty-three projects were approved last year costing an estimated \$105 million. The Administration anticipates that 38 buildings will be completed and occupied during 1957.

The budget included \$375 million of new obligational authority with expenditures estimated at \$150 million for starting the five-year program of general assistance for school construction.

ber of older people. And he urged that the Title I home improvement loan insurance program be liberalized, looking toward an increased modernization program.

There were these other housing recommendations: 1) increases in the general FHA mortgage insurance authority; 2) extension of the FHA military housing program; 3) increase in the authorization for urban planning grants; 4) increase in the special assistance authority of the Federal National Mortgage Association; and 5) continued support of the college housing program in a way that will not "discourage" private capital from helping to meet the needs of the colleges.

An experimental program of flood-damage indemnities was proposed. This reflected work done during recent months on new legislation which the housing agency prepared for Congress. On this point, the message commented, "A modern community is a complex combination of skills, specialized buildings, machines, communications and homes. . . Disaster in many forms — by flood, frost, high winds, for instance — can destroy on a massive scale in a few hours the labor of many years." Disaster assistance legislation requires overhauling, it added.

On the very day the message was read to Congress, Senator Prescott Bush (R-Conn.), and Representative Jesse P. Wolcott (R-Mich.), introduced bills providing such a \$3 billion indemnity assistance program over a five-year period. It proposed that home owners obtain flood indemnity insurance contracts from the HHFA, but its authors insisted that its dual provisions would use private insurance facilities "to the fullest extent."

In the field of water conservation, President Eisenhower called for faster progress and quick action on certain wholly Federal projects. He said a comprehensive legislative program for water conservation would be submitted separately.

The problems of chronic unemployment areas were recognized in a brief reference, and it was said the White House would submit recommendations designed to supplement with Federal technical and loan assistance local efforts toward redevelopment of such areas.

(More news on page 30)

New, fast, accurate way to specify rigid roof insulation

"C" VALUE	NOMINAL THICKNESS
0.36	1"
0.24	11/2"
0.19	2"
0.15	21/2"
0.12	3"

Save time by specifying Armstrong Temlok Roof Insulation, now made to meet the conductances shown above. Under the new "Certified C" system, inch thicknesses are "nominal" instead of actual.



low-cost, easy-to-handle Temlok Roof Insulation is made of tough pine fibers that give the boards unusual strength. Armstrong Temlok can take a lot of abuse on the job without damage and provides a firm base for built-up roofing. Precision-cut edges and accurate sizing assure snug, heat-tight joints.

Now specify by conductance instead of inches with the new "Certified C" thicknesses

This new development in the manufacture of rigid roof insulation saves time on your specifications. Instead of being sized to actual inch thicknesses, Armstrong Temlok® Roof Insulation now is made to specific thermal conductances, or "C" values*. Close control in manufacture guarantees the accuracy of these values.

Simplifies specifications. In designing a roof, you first determine the desired over-all "U" factor. After taking into account the known conductances of the roof deck, built-up roofing, and other elements, you arrive at the insulation conductance figure needed to meet the specified over-all value. This is the figure you use to write your roof insulation "spec." There's no need to convert it to inches. Armstrong will supply Temlok Roof Insulation with a conductance that meets the requirement.

The new "Certified C" thicknesses—available in both plain and asphalt-impregnated Temlok—have been developed jointly by the roof insulation industry and the U. S. Department of Commerce. For full information, call your nearest Armstrong office or write Armstrong Cork Company, 3802 Rock Street, Lancaster, Pa.

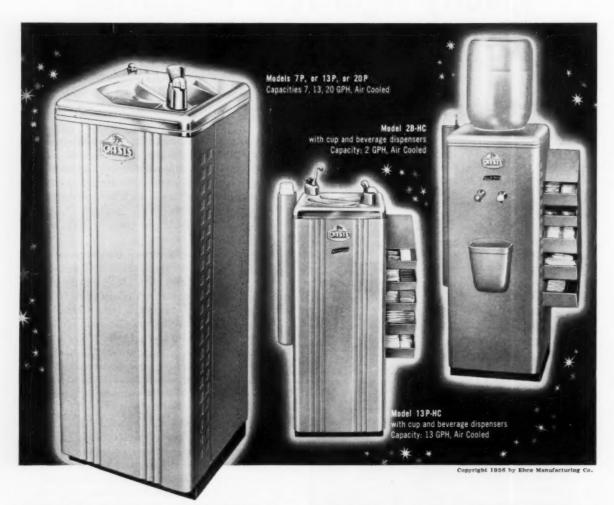
* The amount of Btu's that pass through a sq. ft. of material per degree of F. temperature difference at 75° mean temperature.



ROOF INSULATIONS

Corkboard * Temlok * Asphalt-Impregnated Temlok

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Star-Spangled Features . . . The new Oasis Constellation Series is jam-packed with features! The Oasis Pre-Cooler and the wonderful, new Capacity Booster more than double the amount of cooled water served at a given time. The unexcelled Oasis No-Squirt Bubbler gives a smooth, level drink regardless of varying water pressures. Carefully engineered for whisper-quiet operation. The unbeatable Oasis 5-Year Factory Warranty.

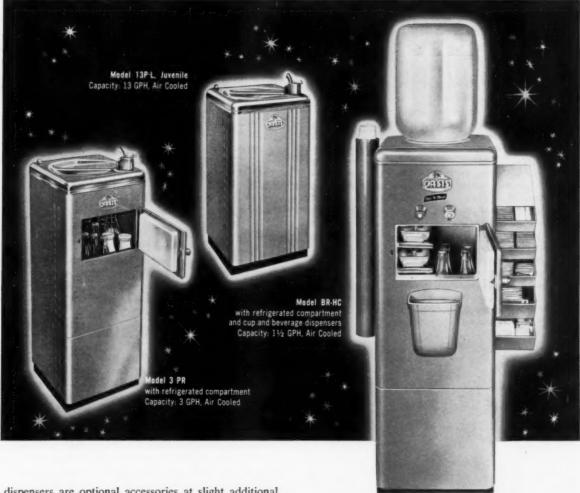
Complete Line... There's an Oasis Water Cooler for every installation. Choose from hand or foot operated models; two to 35 gallon capacities; standard or Hot 'n Cold; bottle or pressure; stainless steel, heavy duty, explosion proof, air-sealed industrial, refrigerated compartments, cafeteria and juvenile.

Beverage Center Hot'n Cold . . . Imagine! A water cooler that gives *piping hot water* for making instant coffee, chocolate, beef broth or chicken broth! The perfect answer to the coffee-break. That's the Hot 'n Cold!

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dispensers are optional accessories at slight additional charge—and individual service packages of coffee, chocolate, Pream and soup can be ordered direct from Ebco. And look! Now there's a bottle type Hot 'n Cold with a refrigerated compartment complete with ice cubes.

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1956 SEEN AS ANOTHER BOOM YEAR FOR CONSTRUCTION

A number of sources in the construction industry have predicted that Canada's building volume will continue high through 1956.

W. G. Malcom, president of the Canadian Construction Association, has forecast another \$5 billion-plus year for the industry. "Nearly one out of every \$5 spent on end goods and services will be spent on construction," he said.

At the same time, the Canadian investment house of Bongard & Co. estimates that the building volume could be increased by \$800 million annually if all requirements could be met over the next 10 years for highways, schools, hospitals, water and sewerage works. The Bongard figures are based on a proportionate projection of a recent estimate of United States needs published by the United States Department of Commerce. In each case the figures deal with what should be spent if capital and materials were available, and not with what will be spent. In theory, it means an increase of around 200 per cent over the amount actually spent in Canada in 1954. The United States estimate boosted the

value by 133 per cent over 1954 expenditures. The yardstick was the gross national product; the Canadian figure of \$26 billion was 6.75 per cent of the United States G.N.P. of \$385 billion.

As projected by the investors, the total annual average for the next 10 years should be \$1.22 billion against the \$405.3 million spent on Canadian construction in 1954.

On the basis of what is being accomplished, Canada compared well with the United States except in the highway category. The comparison showed that, proportionately, Canada is spending nearly as much as the United States on schools; hospital construction in Canada is ahead of that in the United States; water and sewerage spending is about equal; but highway spending in Canada is about half the United States rate.

Housing Looks Healthy

By far the biggest single category of Canadian construction is housing, which should remain high in 1956, according to Harry J. Long, president of the National House Builders Association, who forecast that last year's housing production, estimated at 125,000 units, will be equalled and possibly bettered this year. Housing production in 1954 totalled 102,000 units.

Carryover of uncompleted new houses into 1956 is expected to be about 20 per cent higher than the carryover into 1955, a fact which is seen as promise of another record.

Continued high house production depends on continued effective demand, Mr. Long said; population growth is essential, he declared, but natural increase is not enough. He gave credit to the government for re-activating its immigration program by offering loans to newcomers unable to pay their own passage.

Mortgage Record Reported

For the official record of the year 1954, Central Mortgage & Housing Corporation has stated in its annual report on mortgage lending that activity on the Canadian mortgage marked reached an all-time peak in 1954. The bulk of the (Continued on page 32)



SOME CURRENT CANADIAN PROJECTS: The Canadian Welfare Council plans a new headquarters building (1) at Ottawa; Abra & Balharrie are the architects. The first private office building to be built in Montreal's Terminal Center (2) will be built over the Canadian National Railway tracks; the ends of the building have been designed by architects Greenspoon, Freedlander & Dunn as shear walls because of the high winds in the area. The Burrard Building (3), to be built in Vancouver, will have an earthquake-resistant welded steel frame, and will be covered with a glass and aluminum curtain wall; architects for the building, which is being built at an estimated \$7 to \$7.5 million, are C.B. K. Van Norman and Associates of Vancouver







Developed through the search for lighter, stronger structural materials to go into faster-than-sound aircraft, HEXCEL aluminum honeycomb is accomplishing feats of strength never before equalled by light-weight metal. From the honeycomb wings of the Matador to the outside curtain wall construction of a towering skyscraper—there are a score of amazing new uses for this versatile performer! One of the most recent—and most miraculous—applications for HEXCEL honeycomb is for interior lighting in schools, stores, and offices. If you have a problem that you think honeycomb can solve, telephone or write to HEXCEL Products, Inc., Dept. 156 951-61st Street, Oakland 8, California.

HONEYLITE... the last word in visual comfort!

Picture an all-aluminum ceiling composed of thousands of hexagonal honeycomb cells, casting shadow-free, luxuriant light into every corner of the room...a ceiling whose neutral shading harmonizes with any color scheme or any decor. Picture a ceiling that will always look new, whose aluminum honeycomb panels, suspended under lighting units, will not crack from heat or discolor with age. Such a ceiling can be yours with **HONEYLITE**, the new light-diffusing material that has the following remarkable characteristics:

- * Transmits light with 95%-plus efficiency
- * Non-flammable and UL approved
- * Weighs only two ounces per sq. ft.
- * Permits free circulation of air around light units
- * Provides lowest surface brightness obtainable
- * Has a noise reduction coefficient of .46



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VICTOR GRUEN, A. I. A.



(shown at right actual size) installation is simple, inexpensive. For full ceilings, aluminum T-bars are used to suspend HONEYLITE panels below lighting units. HONEYLITE is also ideal for use in troffers and lighting fixtures.



HONEYLITE

Light-diffusing acoustical aluminum honeycomb

A development of HEXCEL PRODUCTS INC.

Producers of HEXCEL aluminum honeycomb - the wonder material

THE RECORD REPORTS NEWS FROM CANADA

(Continued from page 30)

increase occurred in housing loans, where mortgages totalled \$670 million, a 30 per cent increase over the 1953 figure. The year 1954 was the first in which chartered banks were permitted to participate in mortgage lending and CMHC said this contributed to an easier supply of funds.



Niagara District High School will utilize prestressed beams in the gymnasium roof to give a 71-ft clear span; lift-slab construction will be used throughout the building. Craig & Madill, Toronto, architects

MULTI-LEVEL UNAFLEX

. . . concise instrument for teaching . . . A new concept in LABORATORY FURNITURE...setting the stage for science to stimulate the students' interest and imagination. The advanced Unaflex in its neoteric form transcends the word furniture to become operational equipment. It will include perimeter planning, multi-level work areas, suspended storage space and apronless work tops. This new concept in lab planning by SJOSTROM OF PHILADELPHIA will be previewed at the AASA Conference Exhibit in February, 1956, at Atlantic City . . . and featured in the Unaflex Catalog U-561 off press in early spring. Reserve your copy now.

SJÖSTRÖM OF PHILADELPHIA

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URANIUM MINES PLANNING NEW COMMUNITY IN ONTARIO

A townsite designed to accommodate a population of 12,000 to 15,000 is being planned about 20 miles northwest of Blind River in Ontario's uranium country. The project is being carried out with the cooperation of Algom Uranium Mines and Consolidated Denison Mines, which are getting ready for uranium production.

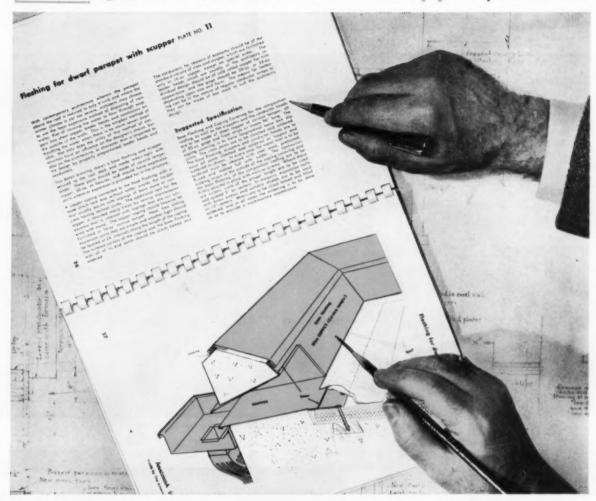
The townsite will be located within the Improvement District of Elliott Lake, which was established by the provincial government when it became apparent that uranium mining would bring large numbers of permanent residents to the area. The improvement district covers an area of 396 sq mi. Discussion between the Ontario government and the companies started about a year ago, and resulted in the reservation of surface rights over a certain area to be transferred subsequently to an improvement district.

OTTAWA ARCHITECTS HOLD THEIR YEARLY MEETING

Members of the Ottawa chapter of the Ontario Association held their annual meeting at the end of November at the Eastview Hotel in Ottawa. Their newly elected officers are: James W. Strutt, chairman; Gordon Pritchard, vice chairman; Henri Gouin, secretary; and D'arcy Helmer, treasurer. Other executive committee members are Wallace C. Sproule, Arthur Taylor and Norman Sherriff.

Engineer F. A. Sweet, general manager of the Canadian Standards Association, addressed the meeting on "Stand-(Continued on page 36)

NEW guide to modern sheet copper practices



104 pages of detail drawings—recommended practices—suggested specifications

Many new drawings—latest information. This new book has the basic construction details previously issued—plus many new drawings and recommendations reflecting current trends in contemporary architecture. All details and specifications embody up-to-date knowledge concerning the use of copper in sheet metal work.

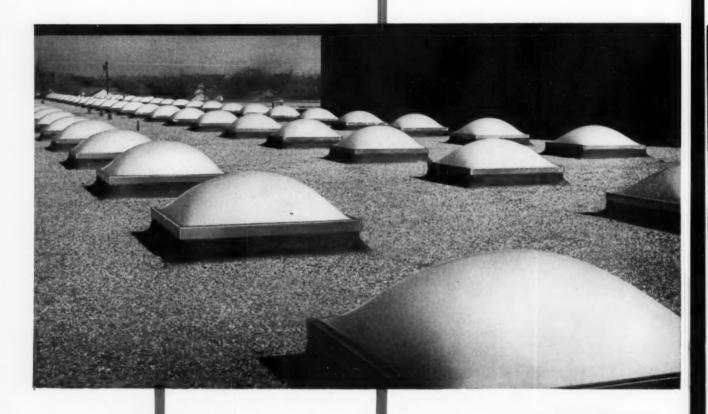
Easy to use. It opens easily, lies flat. The recommended practices and suggested specifications are on the page facing the drawing. Subjects are easy to find, as drawings are in a logical sequence according to type of detail.

Designed for the Architect, Specification Writer, Sheet Metal Contractor. The book is not a definitive text—but rather a practical guide with clear, brief suggestions for meeting everyday problems—on the drawing board, in specifications, on the job.

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PLEXIGLAS Diffusers on lighting fixtures ... for high-level, uniform illumination with low surface brightness San Diego Public Library/ architects: Johnson, Hatch and Wulff





Daylight Louver Panels formed from PLEXIGLAS ... for light transmission, daylight control and weather closure in one continuous surface Katherine Smith School, Houston, Texas/architect; Charles H. Kiefner





Deme Skylights formed from all-weather PLEXIGIAS ...for efficient, balanced daylighting Norman, Oklahoma, High School/architects: Caudill, Rowlett, Scott & Assoc., and Perkins & Will

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THE RECORD REPORTS

NEWS FROM CANADA

(Continued from page 32)

ardization and the Architect." Mr. Sweet emphasized that standards must be a self-regulatory responsibility of private industry. If standards are to be accepted willingly, he said, they must be acceptable to both producer and consumer, they must not limit design or quality but rather represent minimum

requirements, and if they are to be observed on a national scale they must be correlated through a national clearing house.

GOVERNMENT ACTS ON ITS WINTER BUILDING DIRECTIVE

In an all-out effort to reduce seasonal unemployment in the building trades, the Federal government is carrying the biggest public works program in its history through the winter months. This action follows an earlier Cabinet directive.

A recent report lists 23 government projects valued at \$1 million or more on which work is continuing through the season.

SASKATCHEWAN ARCHITECTS CHOOSE NEW EXECUTIVES

The Saskatchewan Association of Architects, holding its annual meeting at Regina on November 1, elected D. H. Stock, president; E. J. McCudden, first vice president; J. C. Webster, second vice president; R. B. Ramsay, secretary-treasurer; and Mr. Webster and G. J. Berry, councillors.

NEWS NOTES

New officers of the Town Planning Institute of Canada include: A. P. C. Adamson, president; P. Alan Deacon, first vice president; Hugh T. Lemon, secretary-treasurer; and A. H. Armstrong, C. E. Campeau, R. Norman Dryden, E. G. Faludi, E. Fiset, L. Gertler, Stanley H. Pickett, D. J. Reddington, D. F. Taylor, J. A. Walker and Murray Zides, council members. . . More architecture on TV is scheduled in Ouebec, where architect Claude Beaulieu is planning a series of 12 weekly halfhour programs on "La Maison des Hommes," which will treat the evolution of the house through the ages. . . The publication of "Permafrost and Buildings" has been announced by the Division of Building Research of the National Research Council as the fifth booklet in its series of Better Building Bulletins; it is available for 10 cents from the National Research Council. Sussex Dr., Ottawa.

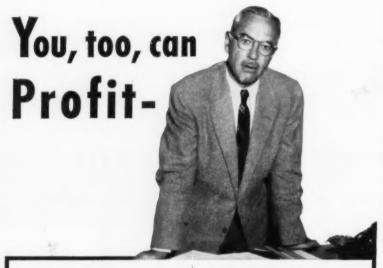
NEW MAGAZINE SURVEYS ITS ARCHITECT SUBJECTS

The Canadian Architect, a new journal published by Hugh C. MacLean Publications Ltd., made its first appearance with the issue of November-December

Deer Park Public Library, Toronto, has a separate entrance for the children's wing; Arthur H. Eadie of Toronto was the architect



(Continued on page 40)



from Pratt & Lambert COLOR SERVICE

"Here's how. I call in my Pratt & Lambert representative and we go over color plans or painting specifications together. He knows color and he knows paint. He gives me reliable recommendations and complete, integrated color schemes that are practical and always within the budget.

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Shaker room and incubator in Fermentation Department. Powers Temperature Recording Controllers are used here



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Fermentation process in research pilot plant controlled by Powers ACCRITEM Regulators and FLOWRITE Valves.



A few of the many vacuum dryers equip-

Below: Air Conditioned Room for Board



AUTOMATIC temperature,

humidity and pressure control helps Abbott Laboratories bring better health to millions



Versatility of Powers control used at Abbott's is indicated by some of the applications shown here and in the following installations: Air conditioning control systems for auditorium with 900 seating capacity; executive offices and dining room, cafeteria and animal rooms; also controls for tablet machines, demineralized water heaters, autoclaves and many other applications.

When you need automatic control for temperature, humidity or pressure, call your nearest Powers office or write us direct. An experienced Powers engineer will gladly help you select the right type of control for your requirements.



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In this 1,000,000-square-foot plant expansion program, there were 80,000 lbs. of Revere Sheet Copper used covering every conceivable type of flashing. Here are some of the more important reasons why copper was chosen as the material for the job: Copper has been "centurytested"... no other metal can come even close to equaling the centuries of satisfactory service enjoyed by copper. The reason for this endurance performance is due to the non-rusting qualities of copper. Copper lends itself to any type of architecture. It is readily fabricated into any desired shape, being formed and soldered without special tools or undue effort. To wrap it up ... there is not another metal or alloy that has all of the desirable construction characteristics of copper.

You don't get an expansion joint like the one shown on the opposite page every day in the week, so we thought it would prove interesting both to architects and contractors to show how this particular joint was constructed. To make it easy to follow we have shown both photographs and details of the various steps. This particular joint bridged the gap caused by adding a new section to an existing plant.

As an added service to architects and sheet metal men all Revere Sheet, Strip and Roll Copper is now marked with the correct gauge and temper in water soluble ink. Ask your distributor to show you. Also ask him about the neat-appearing, weather-tight, easy-to-install Revere-Keystone 2-Piece Cap Flashing.*

*Patent No. 2,641,203 Other Pats. Pending

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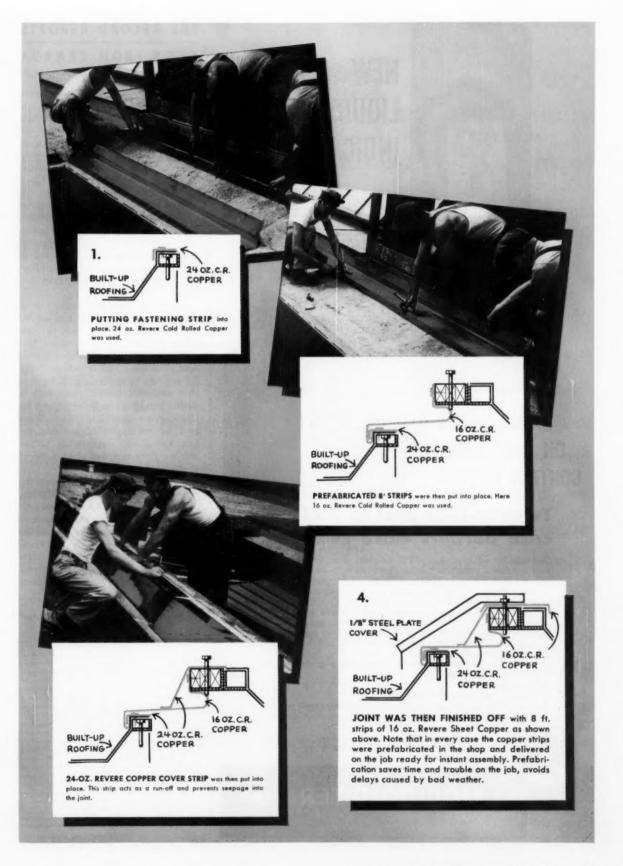
COPPER AND BRASS INCORPORATED

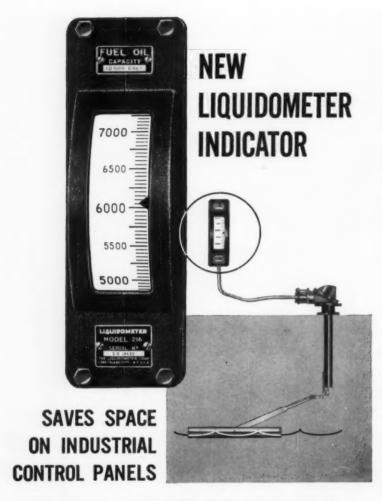
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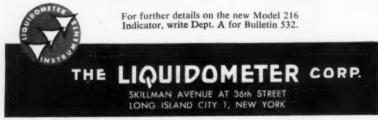
Twenty-inch dial in 3x10%" case permits close readings

The new Liquidometer Model 216 Indicator gives the plant engineer a reliable, automatic reading of storage tank contents. Available in either vertical or horizontal design, the compact and highly readable Model 216 Indicator makes possible multiple installations on crowded control panels.

Teamed with Liquidometer's time-tested hydraulic transmission gaging system, the new indicator provides instantaneous remote indication of liquid levels—automatically. No outside power source is required. Virtually any liquid may be measured, and the indicator can be located up to 250 feet from the tank.

Engineered for dependability, the Liquidometer gaging systems highlight these design features:

- Maintenance free
- Integral temperature compensation
- Ease of installation-requires only one 2" diameter tank opening
- Safety—all gages Underwriters approved for hazardous liquids



THE RECORD REPORTS NEWS FROM CANADA

(Continued from page 36)

1955. Subsequent issues will appear monthly.

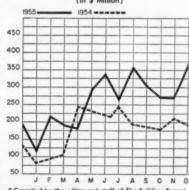
Among the contents of the first number was a report on the results of the magazine's survey of the Canadian architect; the magazine's results were augmented by figures from a similar survey by the Department of Labor (AR, October 1955, pp. 32–34).

Of the 1688 architects registered in Canada for 1955, the report showed, more than a third are registered in Ontario and nearly a third in Quebec; British Columbia claims one-tenth of this figure, the Prairie provinces about one-seventh, and the Maritimes less than a twenty-fifth.

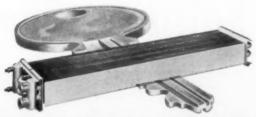
As to the type of construction in which architects work, the respondents indicated that 56.1 per cent of their efforts were in the institutional and commercial fields, 25.1 per cent in residential building, 15.7 in industrial and 3.1 per cent in engineering. The magazine compared these figures with a similar breakdown in dollar volume for Canadian construction in 1954—48 per cent for residential; 32 per cent for institutional and commercial; 12 per cent for industrial; and eight per cent in other categories.

Other contents of the first issue of the magazine, of which James A. Murray, M.R.A.I.C., is the editor, included articles on planning in housing developments, by V. Joseph Kostka, and on community planning, by Edouard Fiset; and a study of the Seaway Hotel, a building which won a Massey Silver Medal for architect Ants Elken and associate architect R. W. Becksted.

Contracts Awarded: Comparative Figures* (in \$ million)



*Compiled by the editor and staff of The Building Reporter, from information collected by MacLean Building Reports
(More news on page 44)



The key

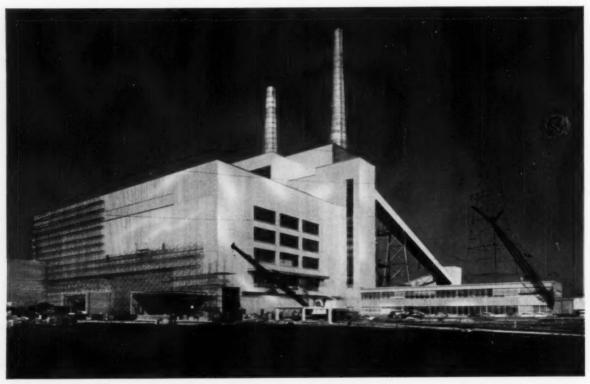
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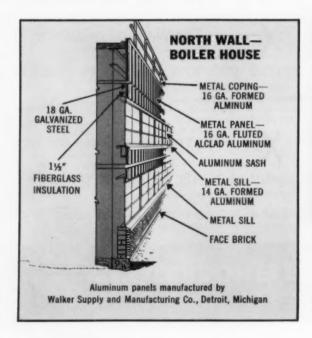
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Detroit Edison estimates big



Detroit Edison Company's new generating station at River Rouge, Michigan—constructed with outside walls made of Kaiser Aluminum selected and fabricated by Walker Supply

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sult: maintenance on the exterior walls is kept to a minimum.

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PLANNING BOARD NAMED TO AID ON NATIONAL CENTER

A "Planning Board" comprised of seven private architectural firms and Stanford Research Institute has been appointed by the District of Columbia Auditorium Commission to help decide what should be built in the way of a national auditorium center in the nation's Capital and exactly where it should be situated.

The Board, for which Pereira & Luckman of Los Angeles have been designated "coordinating firm," already has met with the D. C. Auditorium Commission and gone over nine sites which previously had been selected by the D. C. Redevelopment Land Agency, the American Institute of Architects. the National Park Service, the Fine Arts Commission and the National Capital Planning Commission.

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ADDRESS.....

The Board's work will be completed when it has assisted in selecting one specific site, outlined a suggested program, and given its recommendations on size and general concept of the project. No actual designing of a building or buildings will be done by the Board: Congress will decide upon a method of selecting the architect or architects after it has the Commission's report in hand. The American Institute of Architects has already recommended to the Commission that a national architectural competition be held.

Member firms on the Planning Board, named by the Commission in December, are: Faulkner. Kingsbury & Stenhouse. architects, Washington, D. C.: Giffels & Vallet, Inc., L. Rossetti, associated engineers and architects, Detroit; Holabird & Root & Burgee, architects, Chicago: MacKie & Kamrath, architects, Houston: Pereira & Luckman, architects and engineers, Los Angeles; Revnolds, Smith & Hills, architects and engineers, Jacksonville; and Shepley, Bulfinch, Richardson & Abbott, architects, Boston. The Stanford Research Institute, Washington, D. C., also is a member of the planning group. This unit was created, actually, by the Site and Planning Committee of the Commission.

Making a rapid beginning, the Board presented 20 sketches to the Commission at a session on January 9. These were (Continued on page 334)



PLANNING BOARD for proposed National Auditorium at one of its early meetings: (standing, left to right) - Karl Kamrath; Barnev Balaban, president of Paramount Pictures, New York, and chairman of Site and Planning Commitlee, D. C. Auditorium Commission; Charles Luckman; Agnes E. Mever; chairman, D. C. Auditorium Commission; William L. Pereira; F. S. Mackie Jr. (Sealed) George T. Hayes, Stanford Research Institute; and Robert Dowling (also on Sile and Planning Committee)

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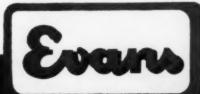
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REDEVELOPMENT PROMOTION: ZECKENDORF IN NEW YORK

The Webb & Knapp proposal for a \$100 million Palace of Progress atop the present site of New York's Pennsylvania Station has been superseded by a still bolder scheme for transformation of a 40-acre area of open track bounded by 30th and 39th streets and Ninth and Tenth avenues into "the city's most important center of commerce, recreation and communication." The "West Side Redevelopment Project," as outlined last month by Webb & Knapp's peripatetic president, William Zeckendorf, would cost an estimated \$300 million to \$500 million and involve the cooperation of both the New York Central and the Pennsylvania railroads, as well as the major television networks and the city of New York.

The original Palace of Progress scheme, as Mr. Zeckendorf tells it, just "spilt out" of its essentially vertical potential: in the city of skyscrapers. economics demanded horizontalization. This was because of the very special engineering problems involved in putting a nine-acre building over operating railroad tracks without interrupting the flow of some 689 trains a day: cost analyses indicated the building could not get tall enough to provide an economic amount of space without becoming so heavy it required entirely uneconomic engineering expenditures. Mr. Zeckendorf asserted, by the way, that the proposal had been found to be feasible

from a purely engineering standpoint.

The new scheme (see below) not only "spills out" the three major elements of the old scheme - the convention hall, the merchandise mart-buyers' offices and the "permanent world's fair" but adds some considerable addenda for example a "television city" which it is hoped will encourage the major networks to resist at least in some measure the lures of the West Coast (a perpetual New York concern these days). The present scheme would provide "large horizontal areas for TV studios hitherto unavailable in mid-Manhattan" - 400,-000 sq ft of production studios and an additional 1,600,000 sq ft for supporting service areas

Another notable addition to the earlier plan: parking facilities. The project is planned to occupy two levels above track level—the middle level, at the grade of the city streets, will provide parking facilities for approximately 7500 cars; the steep slope of the site would make it possible to provide additional levels of parking if that became desirable. Buildings, pedestrian walkways and park areas will be on the top level.

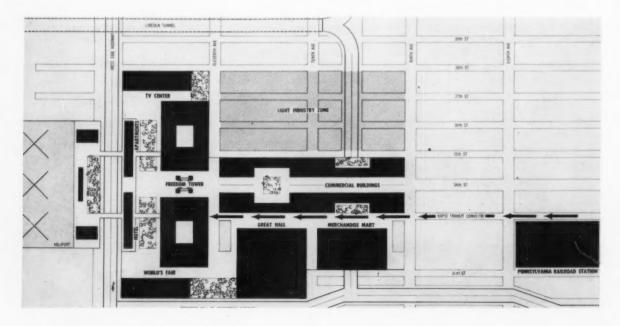
A "rebuilt Pennsylvania Station" is envisaged as the entrance to the entire project, and "the point of origin for a transportation spur to the main body of the project." Use of moving sidewalks within the project itself is — of course — "under study."

Other proposed features: a 2000-room hotel for transients, an apartment hotel for TV City "citizens," a heliport, and — almost inevitably, in a Zeckendorf project, "the world's highest tower." This will be "Freedom Tower," approximately 1750 ft tall, "a free-standing shaft near the center of Manhattan Project II," providing broadcasting transmission facilities, "a glass-enclosed elevator ride high over the city," and "a powerful symbol for the entire project."

The new proposal would provide 12 million sq ft of floor space as compared with 7.5 million in the earlier scheme.

The plan was presented to Mayor Wagner and other city officials at a closed meeting at New York's City Hall last month; Mr. Zeckendorf emphasized that the plan would "cost the city nothing and we are asking for no tax exemptions. The city will get about \$16 million a year in taxes and we will put up a bond to guarantee that it will not lose a penny by use of its condemnation power to help carry out the new plan." The Mayor had no immediate comment, although his press secretary was quoted as saying he found it "bold and exciting."

The preliminary studies for the project have been developed by the Webb & Knapp Architectural Division, I. M. Pei & Associates, Architects. There has been some talk of commissioning leading architects for major buildings if the project materializes.



ARCHITECTURAL RECORD

WESTERN SECTION

Western Editor:

ELISABETH KENDALL THOMPSON

2877 Shasta Rd., Berkeley 8, Calif.

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CRITICISM BY ARCHITECTS FOR ARCHITECTS

Robert L. Durham of Seattle is past president of the Washington State chapter, A.I.A., and is one of two architect members of Seattle's newly created Municipal Art Commission. He has also served his chapter as public relations chairman and is a member of several national com-

mittees on church archi-

tecture.

Architectural criticism is a constantly recurring topic among architects and, although there is little agreement as to how it should be done, there is scant argument that something of the kind is needed. What Mr. Durham proposes - a critical evaluation by architects for fellow architects - has been successfully tried, in his own chapter and at the regional meeting of his A.I.A. district: within the last year Paul Thiry traced the evolution of his design process on the Girls' Dormitory at Washington State College, Pullman. At last year's Northwest regional conference, Hugh Stubbins of Cambridge, Mass., gave the same sort of analysis of his Conference Hall in Berlin, Germany. The success of both occasions, and the insight which they afforded into the thinking of these architects, is - as Mr. Durham suggests - "a stimulus to better design."

Your comments on these guest editorials are welcome. Send them to the Editor, Western Section, 2877 Shasta Road, Berkeley 8, Calif. ONLY Two recognized avenues of architectural criticism seem to exist at this moment — the architectural press and the street corner. But why not a third? Why not architectural criticism by architects directed to architects?

On the street corner, architect and layman alike can declare "open season" on the latest structures. Seldom, however, do sidewalk critics (professional or lay) know the background of the design problem, the specific needs and requirements of the client, or the budget restrictions placed on the architect. Essentially, and necessarily, this critical evaluation becomes a matter of "I like it," or "Why did he do that?"

When the architectural press pronounces, as it has in some instances, on what is good and what is bad, often with no more knowledge of the conditions of design than that of the sidewalk critic, sometimes with photographs whose dramatic qualities outweigh their reportorial virtues, the result has been too much like opening the newspaper to the drama page to determine how much we enjoyed the play the night before.

One wonders, in looking over chapter and convention programs, whether our profession lacks, or has lost, freedom of architectural criticism within itself. Our convention papers are usually general in nature. Chapter program chairmen trying to put on a case-study kind of program find their requests greeted either with expressions of modesty or with pointed refusals. Our standards of professional practice, designed to assure gentlemanly conduct, are sometimes interpreted as discouraging even constructive evaluation of another's work.

What I am suggesting — this third avenue of architectural criticism — is that architects take time to take a look at themselves. The designer of a building is in a better position to explain his design philosophy and to describe the conditions and the difficulties of the job than anyone else. But we do not make opportunities to explain our designs even to our own profession.

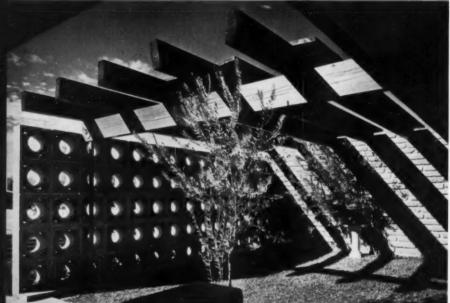
For some individuals such a baring of the soul would perhaps not be possible. But there have been occasions when such a method of evaluation has been tried—successfully—and with valuable results. Architectural analysis, presented with the frankness of a college bull session and blended with the experience of seasoned members of the profession, could provide a stimulus which would undoubtedly pay unexpected dividends, such as for instance the exchange of technical information among fellow practitioners.

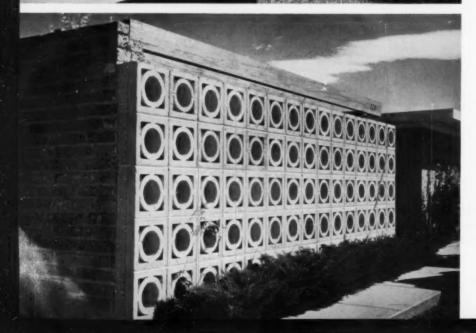
The practice of architecture is like the creation of music. But where the composer is occasionally accorded the opportunity to interpret his creation for both his fellow musicians and the public, the architect rarely is given such an opportunity. Perhaps if we created the opportunity and a technique for interpreting our work to others, we would create an atmosphere which would lead to better design.

What do you think?

Robert L. Durham







A SURGEON'S OFFICE

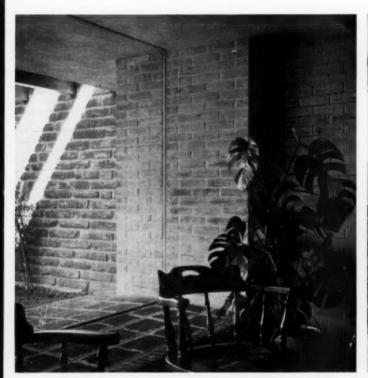
Office for Dr. Darwin W. Neubauer, Tucson, Arizona



Entrance to offices is from road along one side of patio (left, top). Wide overhang, beams over patio and perforated screen (left) shield waiting room from afternoon sun

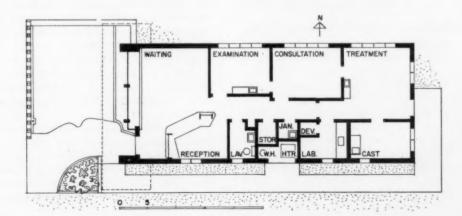
WESTERN SECTION

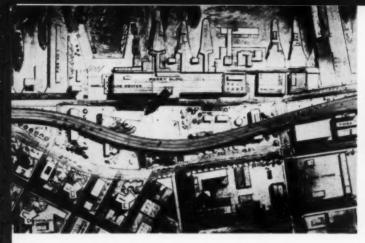
This small office building for a doctor is located on a narrow lot (30 ft wide) made even narrower for building purposes by a required 4-ft allowance on each side. Because of these limitations, the waiting room is on the west side of the building facing the road but separated from it by a patio. A 7-ft screen formed of concrete flue blocks protects the waiting room from the afternoon sun as well as from the thoroughfare. Wood beams across the patio parallel the screens and act as louvers, further cutting down the western sun. The building contains rooms for office consultation, examination and minor surgery and is used by the owner and one associate. Walls are concrete masonry units faced with brick; in waiting room and in patio, wide sill is surfaced with adobe pavers, floor is of quarry tile, ceilings are of cement or acoustical plaster.

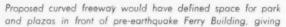




Waiting room faces west because of lot limitations, overlooks semi-enclosed patio through full length glass panelled wall. Treatment room, largest of offices, is for minor surgery









opportunity to develop esplanades leading to piers and terrace overlooking bay. Park and freeway would have been coordi-

A CURVE IS NOT THE SHORTEST PATH

San Francisco Freeway Along Embarcadero Will be Straight-Line, Double-Deck Structure

A curve may be a line of beauty to the artist's eye but to the San Francisco Board of Supervisors it represented last month a two-year delay in plans for completing a stretch of freeway along the city's famous waterfront. After a controversy which stirred up more popular sentiment than any other recent issue involving esthetics, the Board voted unanimously for a straight-line elevated freeway along the Embarcadero — directly in front of the Ferry Building at the foot of Market Street — instead of a curved structure which would have provided a semi-enclosed space in front of the building.

It was the question of the straight line versus the curve which so aroused the public and the press. Professional and layman alike wrote letters to the editor; newspapers wrote editorials and reported amply every development. Finally a public hearing was held before the Board of Supervisors. Some of the Bay Area's most prominent architects, planners and landscape architects as well as university professors, business men and just plain citizens went on record as favoring the curved freeway.

A citizen's committee formed in September by San Francisco banker Jerd Sullivan brought the question to public attention when it asked the local chapters of the A.I.A. and the California Association of Landscape Architects for help in drawing up suggested designs for a park in front of the Ferry Building to document a request for funds it intends to make to the State Park Commission. A committee from each of these organizations, headed by Vernon DeMars for the architects and Theodore Osmundson for the landscape architects, worked for three months on several proposals — including in them both the straight and the curved freeway — for the park. Publication of the sketches

which resulted from their designs and research brought an unexpectedly widespread interest and response to the project with a preponderance of opinion in favor of the curved roadway.

The idea of a park in front of the Ferry Building had been sponsored for some time by a number of San Francisco organizations. When the straight freeway was publicized as a two-level elevated structure, opposition to it gained momentum on the ground that elevated streets and highways have engendered blight, and sometimes slum, conditions wherever planning has not been carried beyond the routing of the roadway. The curved freeway, its proponents argued, would have provided a beautifully-shaped space in front of the Ferry Building where a plaza and a park could have been developed to provide a fitting setting for the building, a historic landmark built around the turn of the century and designed by A. Page Brown, one of the city's best known architects of that period.

Although the decision has now been made to build the freeway directly in front of the building, the Board indicated by approving a resolution to ask for Park Commission funds that it hopes that a park will be a part of the Ferry Building plaza. (The commission is disbursing money from the tidelands oil funds which came to it when the Supreme Court ruled in favor of states rights on oil lands. San Francisco is eligible to receive approximately \$2,000,000 for use on state park projects.)

Among objections made to the curved freeway was the fact that it would cause a delay in construction. Drawings for the straight freeway are almost completed — bids are scheduled to be taken in late April or early May — whereas the curved freeway could not be begun for almost two years. Supporters of the curved



nated to prevent blight conditions, encourage redevelopment of adjoining produce district

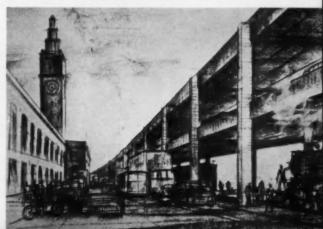
freeway contended that a delay would be a good thing since other projects now pending — notably the proposed southern crossing of the Bay and the redevelopment of the present produce district — would affect, and be affected by, the Embarcadero freeway. The Board, however, led for the last time by their president, George Christopher, before he took office as mayor, decided that it was better to take a chance on erring than to be sure by delaying. Their vote for the straight freeway, it then turned out, reaffirmed an earlier decision made by them two years ago in regard to the freeway.

Editorial comment in local newspapers was interesting: both the San Francisco Chronicle which had supported the curved freeway, and the San Francisco Examiner which had opposed it, gave warm appreciation for the "active interest and solicitude for the city's appearance and welfare" on the part of "the able men in architecture, landscape architecture and planning" but - forgetting that an architect's voice in the early days of a project is that of one crying in the wilderness blamed the defeat of their proposals on their "tardy entry" into the discussions. Both newspapers urged these experts not to withdraw from civic affairs but, as the Examiner said, to "get in deeper - but earlier next time." Said the Chronicle: "The remaking of San Francisco ought not to be left to the engineers and workers in steel and cement; planning is of utmost importance lest the charm of the city . . . be buried forever under a maze of speedways and ramps."

Architects, planners, and thoughtful citizens of all callings find nothing to quarrel with there: their big hope is that *next* time they will have a chance at an earlier point in the development of civic projects to make suggestions and to be heard. Straight freeway, below, will run directly in front of Ferry Building, with surface traffic, plaza and possible park areas to west. Only lower part of building will be hidden by straight freeway. Space beneath freeway structure may be used for bus parking. Sketch at bottom shows possible relation between building and freeway with lower part of building in almost constant shadow. Engineers have promised slender columns to minimize sense of crowding against building









How to stretch a \$12,000 home-building budget . . . using steel

It's a familiar story: young couple...house hunting...small budget...big plans. Usually, couples like this must either lower their sights or wait until their savings grow. Usually—but not always. Here is a new home that has everything its owners wanted...at a price they could afford: under \$12,000.

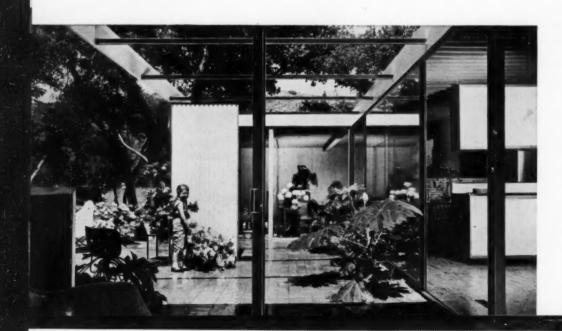
The couple wanted a small, easy-to-care-for home; but wanted it to be open and big looking. They wanted a lot of natural light inside; but their building site was heavily shaded. Above all, they wanted a sturdy, substantial structure; nothing flimsy. Using steel (for frame, siding and roof decking), designer Pierre Koenig delivered all these features: Steel frame needs no inside support, so this home's 1,000 sq. ft. interior is open and uncluttered with conventional bearing walls. Thin, trim steel columns leave large perimeter areas open for steel sliding door frames. Thus, all available sunlight is utilized, giving a light, cheerful atmosphere on a shaded lot.

FRAME AND ROOF UP IN 2 DAYS: The steel framework was cut and joints electrically welded (for clean, smooth joints) at the shop, then transported to the building site for easy erection. With a minimum number of job welds necessary, the framework and 1400 square feet of roof decking were in place in two days.

CORRUGATED STEEL SIDING: The designer saw galvanized corrugated steel sheet as a strong, "different looking" siding material. The steel sheets, painted a light blue, are fastened to the steel channels. The result is a very economical, durable and attractive siding.

SEALED IN CONCRETE SLAB: With the frame in place, and siding fastened, the concrete slab was placed. By so burying the steel at a marked height (see cross-sectional drawing), all details are simplified and everything is waterproof. And it makes for a quick, economical job...and solid construction.

There are any number of additional advantages to building with steel. Among them is low upkeep; no problem with termites; no warping and checking. The obvious strength and long life of steel predicts a better loan value and lower insurance rates for this type of home.



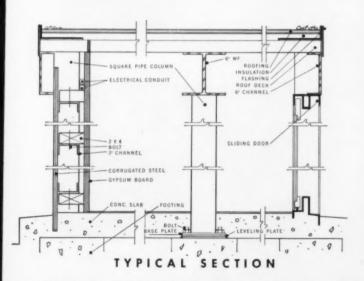




Designer: Pierre Koenig Location: 1884 Los Encinos, Glendale, California

Steel: 6" wide flange beams; 6" channel continuous beam and facia; 3" channels; corrugated steel siding sheets; steel roof decking; sliding steel door frames and square steel pipe columns. The major portion of this steel is United States Steel.





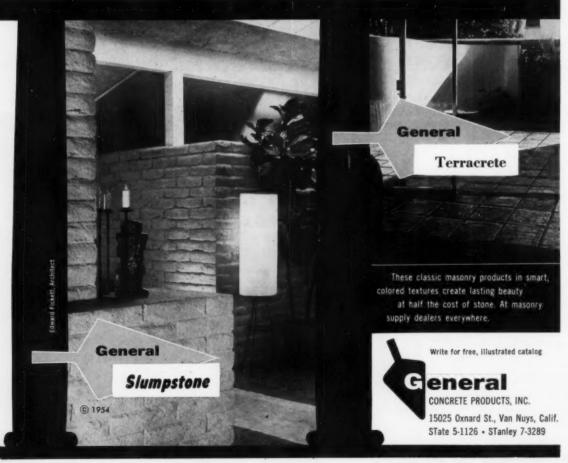


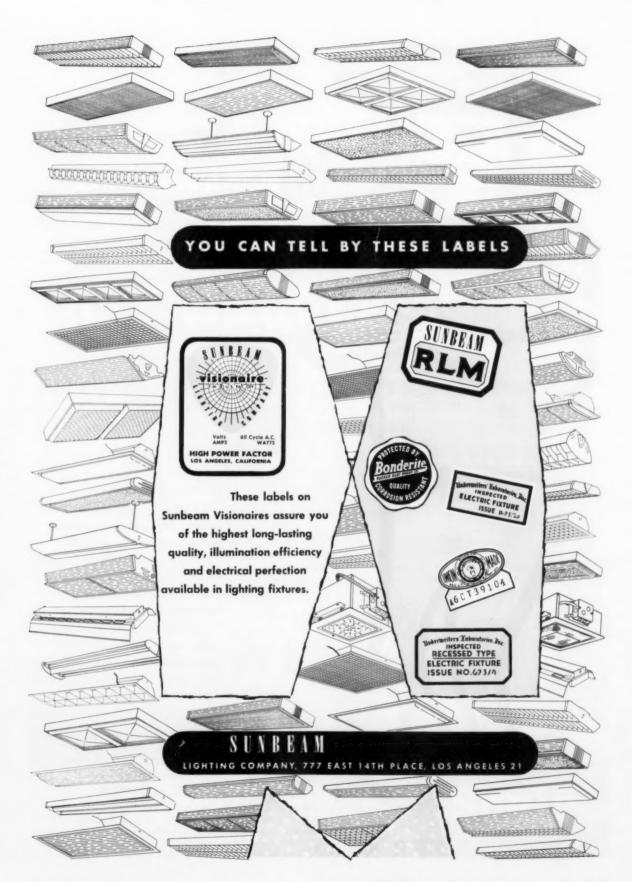
ARCHITECTS AND ENGINEERS: We expect to have additional information on the use of steel in residential construction. If you are interested in receiving this, please send us your name and address and we will forward the material as it becomes available. Write: Columbia-Geneva Steel Div., United States Steel Corporation, 120 Montgomery St., San Francisco 6—Architects and Engineers Service.

Western homes of the future are now building with steel... UNITED STATES STEEL



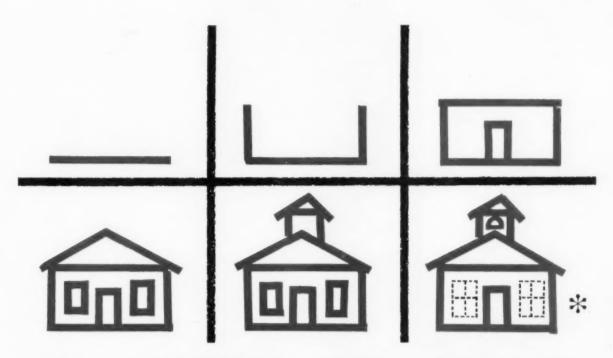
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There's no limitation to standard sizes when you specify Soulé Paramount Steel or Series 900 Aluminum windows. And our design engineers will assist you with problems concerning materials, sizes and shapes, to help you get your window at the lowest cost. A big plus service is expert installation by Soulé. And remember, we deliver on time!





Opened on time! Liberty School, Marysville, Washington. A steel installation by Soulé where prompt manufacturing and service helped open school on time! Architects:
Mallis and De Hort. Contractor: Paul Odegard.

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Soulé LEADER IN METAL WINDOWS

3303 SS 360

WESTERN BUILDINGS IN THE NEWS



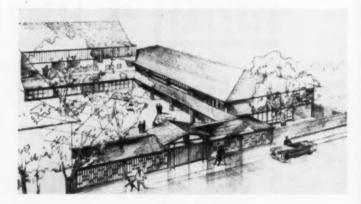
View Apartments for Bel Air

This two-unit, 22-apartment building in Bel Air district of Los Angeles area, was designed to give each apartment advantage of dramatic view over city, mountains and ocean. Each also has its own private balcony or fenced terrace. Units are each two stories high, connected by "patio esplanades." Palmer & Krisel are architects, Eckbo, Royston & Williams are landscape architects



New Engineering Building

First of three new buildings for U.S.C.'s School of Engineering is this chemical and petroleum engineering building, a unit of Southern California Industrial Research Center which is a part of the School. Building, now under construction, will contain classrooms and laboratories. Smith, Powell and Morgridge are architects; Lawrence Test is University architect



Church School Unit Designed around Court

Because of the restricted site of this church and its location in downtown area, the new educational unit for First Presbyterian Church, Boulder, Colo., now being added to existing church, has been designed around a courtyard. New unit, containing chapel, classrooms, dining room and kitchen, was designed by Hobart Wagener, architect, with Pietro Belluschi as consulting architect



Longer clear spans possible with prestressed concrete frame construction permit an unusual degree of flexibility in counter and department arrangement in recently completed May Company department store in new West Covina, Calif., shopping center. Exterior surfacing of the building is porcelain enamel; letters in signs are also porcelain enamel. Albert C. Martin and Associates were architects and engineers



How much hinge does a door need?



It depends upon door weight and frequency of use

When the door is heavier than the conventional type, or is equipped with a door closer, or is a high-frequency door (over 400 times daily) in the entrance to a department store, office building, theater, school, or other public building, it should hang on the finest heavy-duty hinges available.

What are the finest heavy-duty hinges?

Stanley full-jeweled® ball-bearing hinges

The Stanley full-jeweled ball-bearing hinge is the only hinge that takes care of all wear solely through ball bearings.

It is made so that both lateral and vertical stress are transmitted to the bearings — there is no direct pressure on the pin. The cutaway view shows how the specially built-up raceways shoulder the load to the bearings.

What does this mean to a building?

It means hinges that won't wear out

They are moisture proof, dust proof, and squeak proof. They last for the life of the building *and* they COST NO MORE. When you specify hinges, specify Stanley and where needed specify Stanley full-jeweled ball-bearing hinges.

REMEMBER TO A DOOR

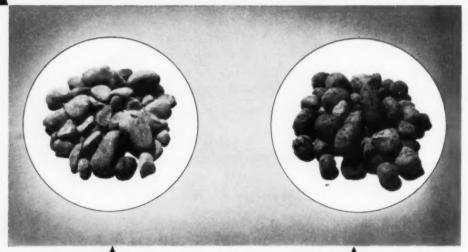


Get your copy of the new folder that tells and shows all about this Hercules of hinges. Write Stanley at 162 Lake St., New Britain, Conn. It's free, of course.

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Los Angeles Office: 108 West 6th Street San Francisco Office: 681 Market Street Seattle Office: 105 Second North IN A STRUCTURAL CONCRETE-

GGREGATE SHAPE IS IMPORTANT!



There is no substitute for good river gravel for normal weight structural concrete!

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there is no substitute for BASALITE Expanded Shale Aggregate for lightweight structural concrete!

MORE and more demands are being made on lightweight structural concrete where reduction in deadweight is a major consideration. When the specification calls for "lightweight concrete" then, naturally, the choice is BASALITE* expanded shale lightweight concrete.

Pre-crushed, BASALITE Aggregate is expanded, by burning, into spheroid particles, which closely resemble river gravel in shape (see illustration above), making for good workability, placement and gradation. Compressive strengths of 2500 and 3500 PSI are easily achieved with the same cement content used in normal weight concrete—yet BASALITE lightweight concrete is one-third less in weight (95 to 105 PCF). For insulative values BASALITE concrete will be four to five times that of natural aggregate concrete, with about the same shrinkage.

* SIZES: 1", 9/16", 5/16" and sand. Approximate dry weight per cubic foot: 36 lbs., 45 lbs., 55 lbs. and 63 lbs. respectively.

BASALITE Expanded Shale Aggregate for lightweight structural concrete warrants your consideration for every specification.

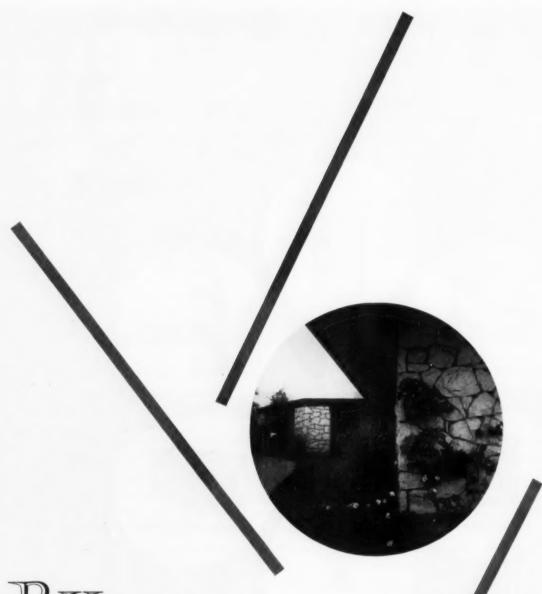
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Nero never
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set the world
on fire...
he just
wanted to
stay warm!



Fact is, those Roman palaces were cold in the winter, so hot in the summer, so drafty and disagreeable, you can't blame Nero for getting all burned up about it! How could Nero know that one day Fir-Tex would come along-and turn all this into ancient history? That's right. Today our builders insulate our homes against drafts, dust and noise...against summer's heat and winter's cold... with amazing Fir-Tex products that insulate as they build. There is superior weather insulation, as well as tremendous bracing strength, in Fir-Tex Insulating Sheathing (either asphalt impregnated or asphalt impregnated-asphalt coated). There is superb "noise insulation" in Fir-Tex Acoustical Tile that's an attractive interior

> If Rome had been built in a day like ours, Nero would never have let it go up in flames. He would have hired architects and builders who were smart enough to specify Fir-Tex.

finish as well.



You Can
BUILD BETTER
Today with



WASTE SPACE

Look Deep, Not Just Far

My eyes see much here but find so few places where they can rest," said Sabro Hasegawa, Japanese artist who is now in San Francisco on the staff of the American Academy of Asian Studies and in Oakland as a member of the faculty of the College of Arts and Crafts. "In Japan our eyes can penetrate materials and find a place to rest deep within. So often here they can never go beneath the surface."

This commentary by a distinguished artist goes beyond our use - or misuse of materials; when related to our philosophy of design it has a deeper significance. Perhaps we haven't developed the desire for "a place to rest our eyes" to the point where it becomes a conditioning element in design - however much our sense of the inherent beauty of materials may impel us in using them in their natural state. Perhaps we need, more than we have realized, to get back to the first principles - in the essence of structure, in the fundamentals of space concepts, in volume, form, color, as well as in the nature of materials,

The Leak in the Roof

The leaking roof - perennial joker for architects - is particularly loved by laymen who like to apply it especially to the building praised by peers of its designer and critics as well. ("Maybe it's beautiful - but the roof leaks.") Architects of beautiful buildings may take heart from the analogous remark of U.C.L.A. Librarian Lawrence Powell, who has compiled a bibliography for persons who want to know more about the culture and spirit of the Southwest than the bare facts can give them. Says Dr. Powell: "An inspired work of fiction is a better guide than a pedestrian work of fact." Perhaps we should ponder which buildings will convey to later ages the "spirit and culture" of our day, the beautiful ones whose roofs leaked or the "pedestrian works of fact"?

The Rewards of Architecture are Intangible

The most expensive item on the menu at San Francisco's swish Italian restaurant, Fior d'Italia, is Roast Beef Gaidano at \$10 for a two-person serving. This fancy dish was named not for the chef who created it, not for the opera star for whom it was created — but for Mario Gaidano, the San Francisco architect for the remodeling of the restaurant. Who said architecture was its own reward?

E.K.T.



How to give your students the air.....

mervent * built especially for schools in switch brings 30% more fresh outside

Mild Climate Areas, provides fresh air cooling, heating and ventilating within the nominal cost of heating alone.

Sure, heating's necessary for classroom comfort—even in mild climate areas. But, for 75% of classroom hours, it's *fresh air cooling* that's the big essential. And some schools just don't get it!

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switch brings 30% more fresh outside air inside the classroom—where it's needed.

Cost? A good question! AMERVENT, because we've designed it for mild climate requirements, costs only a fraction more than a simple heating system. A good answer!

Performance? AMERVENT has more than four solid years of classroom proof-by-use in mild cli-

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Please send me the bulletin on Amervent cooling, heating, and ventilating units for Mild Climate Areas.

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Name

Address

OREGON BUILDS NEW INSTITUTIONAL UNITS

Construction is expected to begin early this year on about \$10,000,000 worth of institutional buildings for the state of Oregon, including the first onethird of the state's \$14,000,000 mental hospital, already in the working drawing stage. Glenn Stanton of Portland is architect for this project which will be constructed on a site near Portland.

An intermediate institution, to be located 14 miles north of Salem, will also be under way sometime this year. \$2,500,000 of the required \$6,000,000 to build this institution is now available: the remaining funds will be requested from the 1957 legislature. Both of these institutions were authorized by a gen-

eral election in 1954.

Three new buildings at Fairview Home, costing \$839,000, which Wilmsen and Endicott, Eugene architects, who designed the first unit, have been commissioned to design; new buildings for the state blind and deaf schools; a new power plant at the penitentiary; remodeling of the main kitchens at Oregon state hospital in Salem and the Oregon tuberculosis hospital, are also scheduled.

State officials indicate that despite the current program at state institutions construction of other buildings will be required even before the 1957 session of the legislature.

L. A. CONSIDERS HEIGHT LIMIT END

A PROPOSED CHANGE in Los Angeles' present 13-story height limit, currently a raging controversy in that city, will probably be given to the voters to decide

Plans submitted to the city planning commission propose a variety of changes ranging from increasing the height limit to 20 stories to eliminating the restriction completely and allowing buildings of any desired height. Back of the latter is the hope that New York capital would be interested in erecting skyscrapers, including a Rockefeller Center-type

The restriction, originally intended to protect the city from possible earthquake damage, has considerable support from various quarters, but not just because of seismic factors. Skyscrapers, say supporters of the present ordinance, would increase traffic problems, create need for additional sewer capacity, water mains, gas mains and electric mains, and reduce amount of light at street levels.

Critics of the restriction say that the increase in the limit would be justified by economic advantages, and that skyscrapers would only be located in areas where property owners approve of such construction.

The city's 27-story city hall was built after the height-limit restriction became

BUDGET BUREAU STUDIES NEW S. F. FEDERAL BUILDING

SAN FRANCISCO will have a new \$20,-000,000 to \$25,000,000 federal office building if the Budget Bureau's on-thespot studies find it feasible. If approved by the bureau the proposal will be submitted to Congress at the next session. The building, which would house federal courts and other offices, would be located in the vicinity of the Civic Center, according to bureau officials. However, since San Francisco has never authorized preparation of a master plan for its Civic Center, location of additional buildings here makes a major problem for the city's planning department.

The building would be financed by the lease-purchase method, with cost of site to be defrayed by sale of the Old Mint building and two other old buildings currently used to house federal offices.

Construction of \$40,000,000 worth of other new federal buildings - including a parcel post building, customs building, and new garage for federal vehicles in the area around San Francisco's Civic Center is also to be discussed by the next Congress, according to Representative Gordon L. McDonough. If approved, construction of these buildings could get under way, also by private capital under the Lease-Purchase Act.

DENVER INITIATES RENEWAL PROGRAM

While Denver's urban renewal commission discussed future ways by which the city could be "redesigned in terms of today's world," active steps toward the city's first primary slum clearance project were taken as the commission designated a 28-acre tract in East Denver for clearance and resale to private developers.

The area to be razed, comprising chiefly single houses of which 65 per cent were "without bath or toilet, or (Continued on page 48-22)



It's better to plan than patch (telephone facilities, that is)

People who are shopping for a new home like to feel that every modern convenience has been built into the house they select. Exposed wires, for example, are a dead give-away that telephone outlets were put into the house rather than planned into it. Yet it costs so little to put built-in telephone facilities in your plans.

Why not take advantage of Pacific Telephone's free Architects and Builders Service. Let us help you plan the kind of telephone facilities every buyer expects to find in his home.

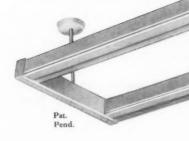
Put built-in telephone facilities in your plans



Pacific Telephone

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Using New 800 Milliampere Lamps

Totally new in conception, design, performance. Takes full advantage of the high output of new 800 MA., rapid start lamp. The only indirect luminaire available that mounts within 12 inches of ceiling without severe light blocking. Slender lines and open construction passes amazing percentage of upward light back to work surface... Gives you far more light per dollar than ever thought possible. Louvering effect of fixture subdues ceiling brightness. No pronounced ceiling pattern. Faultless light distribution; its comfort and quality astonishes everyone.

By all means, investigate this exciting new fixture promptly. The more you know about it, the more use you'll find for it. Its possibilities are limitless. Where shall we send your complimentary file of technical data? Kindly mention this publication and our catalog number, PV-288.

Features

- Upward and downward light balanced for best seeing.
- High efficiency.
- Brightness meets ASA school lighting standards.
- Mounts within 12" of ceiling without blocking return light.
- Near perfect visual comfort in any size room.
- High adaptation level yet low brightness and brightness ratios.
- Economical to install.
- Easy to maintain.
- Harmonizes well with modern architecture.
- Extremely flexible in arrangement

SMOOT-HOLMAN COMPANY

INGLEWOOD



CALIFORNIA



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OUR SERVICE IS LIMITED TO THE WEST AND SOUTHWEST

dilapidated," according to the 1950 census, lies in the shadow of a new highway and overpass scheduled for construction next year.

A federally-financed survey will be made to determine the exact number of houses to be torn down; since most of them are currently occupied, their residents will have to be relocated. The land will be bought, cleared and redeveloped under the Urban Renewal Program.

BUILDINGS IN A DESERT: LOS ANGELES OF FUTURE?

THE PALM TREE, once almost symbolic of Southern California, is becoming extinct, and the orange and walnut groves are disappearing before the bulldozer of the residential subdivider, leaving a "barren land of rooftops instead of trees and shrubbery as in former years," says Los Angeles Regional Planning Commission chairman Robert A. Groman.

A special meeting to discuss restoring the area's natural beauty was held recently with city and county planning department representatives and members of park and recreation departments and civic groups from the Los Angeles area.

Paul Williams, architect member of the Los Angeles Municipal Arts Commission, reporting on progress in highway beautification in other parts of the country, urged that the city invite Robert Moses, city planner whose park-lined freeways carry the vast traffic in and around New York, to survey the Los Angeles area and make recommendations.

A serious campaign is planned to work on the overall problem of beautification, according to Groman, with new county ordinances drawn up by the Regional Planning Commission to be submitted to the Board of Supervisors which, if adopted, would require new planting in all subdivisions as they are built. Plans for a series of meetings of the same group have been made to study the matter further.

"Unless we awaken to what is going on and act accordingly," Groman said, "the next generation will inherit only a mass of buildings set in an empty desert."

PROFESSIONAL NEWS New Offices, Firm Changes

Charles N. Dougherty, architect, and Ike B. Bond, engineer, have moved to 211-B Sacramento Street, Vallejo, Calif.

John Nordbak, architect, has moved to 12007 Paramount Blvd., Suite 1, Downey, Calif.

New address for Harold Carver, architect, is 5711 Webster Street, Arvada, Colo.

Gene Zema and A. O. Bumgardner, Seattle architects, have formed a partnership to specialize in commercial and institutional architecture. Each will maintain his own residential architectural practice.

Marvin Renfro, architect, has opened an office at 34078 La Plaza, Dana Point, Calif.

CORRECTION

William J. Fox, Jr., of Missoula, Montana, should have been listed in November's account of the Northwest Regional Conference as a member of the regional judiciary committee nominated for two years. Theodore Prichard of Moscow, Idaho, was erroneously listed as a committee member.

- February 3-4: 8th Annual Industrial Engineers Institute, to be held simultaneously on Berkeley and Los Angeles campuses, University of Calif.
- February 13-17: Winter convention, American Society of Civil Engineers, Hotel Baker, Dallas, Texas
- April 11-14: American Industrial Development Council 1956 convention, St. Francis Hotel, San Francisco. Calif.
- · April 21-29: Oakland Home and Garden Show, Exposition Building, Oakland, Calif.
- May 15-18: 88th annual national AIA convention, "Architecture for the Good Life". Biltmore Hotel. Los Angeles, Calif.

Events to Come:

- June: Aspen Design Conference, Aspen, Colo. Washington State Chapter AIA Honor Awards Dinner
- · July: Earthquake Engineering Conference, University of California, Berkeley

WESTERN SECTION INDEX TO ADVERTISING

MANUFACTURERS' PRE-FILED CATALOGS Catalogs of the firms listed below are available in the 1956 Sweet's Catalog Files as follows:

Architectural File (green) Industrial Construction File (blue

le	Light Construction File (vellow)	
a	American Air Filter Co., Inc	48-19
	Basalt Rock Co., Inc.	48-14
a-ic	Baxter, J. H. & Co	48-10
	Columbia-Geneva Steel Div	18-6-7
a	Dant & Russell, Inc.	48-18
	General Concrete Products, Inc	48-8
а	Nelson, Herman Products	48-19
	Pacific Tel. & Tel. Co	48-20
	Palos Verdes Stone	48-16
	Smoot-Holman Company	48-21
	Soule Steel Company	48-11
a	Stanley Works	48-13
a-ic	Sunbeam Lighting Company	48-9
ie	United States Steel Corp	8-6-7
	Utility Appliance Corp	48-15
	Weber Showcase & Fixture Co., Inc	48-17

Western advertising offices: LOS ANGELES, Bob Wettstein, 672 S. La fayette Park Pl.; PORTLAND, Bob Wettstein, 921 S. W. Washingto St; SAN FRANCISCO, Bob Wettstein, Howard Bidg., 209 Post S.

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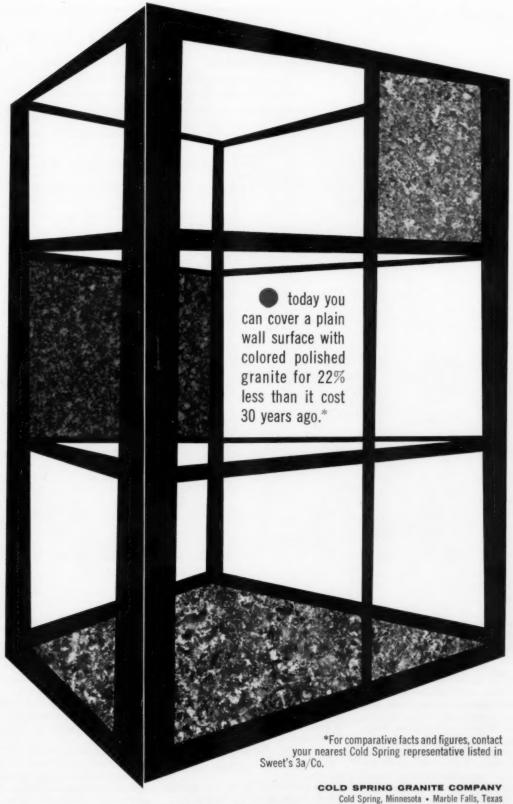
Its theme?
LIVE BETTER...ELECTRICALLY.

Its objective? To sell all the benefits of electrical living, and increase development of the residential market for electrical products. This means creating a desire for homes designed for better living ... electrically! The LIVE BETTER ... ELECTRICALLY campaign will bring about an era of new freedom of design in residential architecture. It gives the builder a greater profit opportunity for merchandising electric homes.

You'll be hearing more about it soon.

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Cost file: File 8-B-3 on cost of 12 granite entrances
Brochures: Granite in Places of Worship; Granite in the Hospital; Granite in the School

THE RECORD REPORTS

CONSTRUCTION COST INDEXES

Labor and Materials

U. S. average 1926-1929=100

Presented by Clyde Shute, manager, Statistical and Research Division, F. W. Dodge Corp., from data compiled by E. H. Boeckh & Assocs., Inc.

NEW YORK

ATLANTA

	Residential		Apts., Hotels Office Bldgs. Brick	Commercial and Factory Bldgs. Brick Brick and and		Residential		Apts., Hotels Office Bldgs. Brick	Commercial and Factory Bldgs. Brick Brick and and	
Period	Brick	Frame	and Concr.	Concr.	Steel	Brick	Frame	and Concr.	Concr. S	Steel
1930	127.0	126.7	124.1	128.0	123.6	82.1	80.9	84.5	86.1	83.6
1935	93.8	91.3	104.7	108.5	105.5	72.3	67.9	84.0	87.1	85.1
1939	123.5	122.4	130.7	133.4	130.1	86.3	83.1	95.1	97.4	94.7
1946	181.8	182.4	177.2	179.0	174.8	148.1	149.2	136.8	136.4	135.1
1947	219.3	222.0	207.6	207.5	203.8	180.4	184.0	158.1	157.1	158.0
1948	250.1	251.6	239.4	242.2	235.6	199.2	202.5	178.8	178.8	178.8
1949	243.7	240.8	242.8	246.4	240.0	189.3	189.9	180.6	180.8	177.5
1950	256.2	254.5	249.5	251.5	248.0	194.3	196.2	185.4	183.7	185.0
1951	273.2	271.3	263.7	265.2	262.2	212.8	214.6	204.2	202.8	205.0
1952	278.2	274.8	271.9	274.9	271.8	218.8	221.0	212.8	210.1	214.3
1953	281.3	277.2	281.0	286.0	282.0	223.3	224.6	221.3	221.8	223.0
1954	285.0	278.2	293.0	300.6	295.4	219.6	219.1	223.5	225.2	225.4
pt. 1955	298.0	290.6	305.6	314.0	308.7	226.6	226.2	230.9	234.1	234.2
et. 1955	298.4	291.0	306.1	314.4	309.1	229.6	229.0	233.3	235.7	236.1
ov. 1955	298.6	291.2	306.4	314.6	309.3	229.8	229.2	233.6	235.9	236,3
	% increase over 1939					% increase over 1939				
Nov. 1955	141.7	137.9	134.4	135.8	137.7	166.3	175.8	145.6	.142.2	149.5

ST. LOUIS

SAN FRANCISCO

Nov. 1955	151.5	152.2	132.8	1939	136.4	157.9	165.8	138.9	137.3	145.4
Nov. 1955	277.1	269.9	276.3	284,3	281.3	272.3	263.9	280,5	289.3	285.9
Oct. 1955	276.8	269.6	276.0	284.2	281.0	271.9	263.5	280.0	288.9	285.5
Sept. 1955	276.6	269.4	275.7	284.0	280.8	271.5	263.1	279.5	288.5	285.1
1954	266.6	260.2	263.7	273.3	266.2	257.4	249.2	264.1	272.5	267.2
1953	263.4	256.4	259.0	267.6	259.2	255.2	257.2	256.6	261.6	259.7
1952	259.1	253.2	249.7	255.0	249.6	250.2	245.0	245.6	248.7	249.6
1951	252.0	248.3	238.5	240.9	239.0	245.2	240.4	239.6	243.1	243.1
1950	232.8	230.7	221.9	225.3	222.8	227.0	223.1	222.4	224.5	222.6
1949	221.4	220.7	212.8	215.7	213.6	213.0	207.1	214.0	219.8	216.1
1948	227.9	231.2	207.7	210.0	208.1	218.9	216.6	208.3	214.7	211.1
1947	202.4	203.8	183.9	184.2	184.0	193.1	191.6	183.7	186.8	186.9
1946	167.1	167.4	159.1	161.1	158.1	159.7	157.5	157.9	159.3	160.0
1939	110.2	107.0	118.7	119.8	119.0	105.6	99.3	117.4	121.9	116.5
1935	95.1	90.1	104.1	108.3	105.4	89.5	84.5	96.4	103.7	99.7
1930	108.9	108.3	112.4	115.3	111.3	90.8	86.8	100.4	104.9	100.4

The index numbers shown are for combined material and labor costs. The indexes for each separate type of construction relate to the United States average for 1926–29 for that particular type — considered 100.

Cost comparisons, as percentage differences for any particular type of construction, are possible between localities, or periods of time within the same city, by dividing the difference between the two index numbers by one of them; i.e.: index for city A = 110index for city B = 95

(both indexes must be for the same type of construction).

Then: costs in A are approximately 16 per cent higher than in B.

$$\frac{110-95}{95} = 0.158$$

Conversely: costs in B are approximately 14 per cent lower than in A.

$$\frac{110-95}{110} = 0.136$$

Cost comparisons cannot be made between different types of construction because the index numbers for each type relate to a different U. S. average for 1926–29.

Material prices and wage rates used in the current indexes make no allowance for payments in excess of published list prices, thus indexes reflect minimum costs and not necessarily actual costs.

These index numbers will appear regularly on this page.

BIRDED ATING

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Here on this page are a few of the many new or unusual uses for grating being pioneered every day. Each is an exacting job where only standards of quality equal to BORDEN'S will do.

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ON THE NEW JERSEY GARDEN STATE PARKWAY . . . Shown here, Borden R/WL Roadway Grating fabricated to exact sizes for side-walks and center mall on the N. J. Garden State Parkway. Remember, where schedules and dependable performance count, always SPECIFY BORDEN.



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stallation meet minimum property requirements for F.H.A. loans. The Styron label at the right identifies tiles made of dependable Dow polystyrene. When you install Styron plastic wall tile in the homes you build, you're getting the benefit of the best-established prestige name in the industry. There's the package: THE LUXURY LOOK, Guaranteed STYRON Plastic Wall Tile—and more profits for you!



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THE LUXURY LOOK

Give your homes the extra touch of luxury with Guaranteed Styron Plastic Wall Tile





The Luxury Look comes to any home quickly and easily with guaranteed Styron® plastic wall tile. An almost unlimited range of modern colors and shapes (popular king size squares above, interesting new brick shapes, left) give rooms the look of luxury that sells homes fast.

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The tree that escaped the crowded forest

The Story of the Tower, By Frank Lloyd Wright, Horizon Press (New York) 1956, 132 pp. illus, \$6

RIGHT says of Price Tower — "as trees crowded in the forest have no chance to become a complete entity - standing free it may establish identity and preserve it . . ."

The editors of Horizon Press have compiled a book that presents the Tower as it was conceived - "a natural architecture, true to the nature of the problem, to the nature of the site, of the materials and of those for whom it is built in short, of time and of man."

With photographs, chosen from a large and comprehensive group taken by the son, Joe Price, they have told, step-by-step how The Tower has grown from an idea, tall above the prairie town. Following introductions by Frank Lloyd Wright and Mr. Harold Price, the photographs and drawings describe the site before illustrating the growth of the building from

the first excavations to last-minute shots of the interiors. There are photographs of the same view taken at different times of a day and in different seasons.

The page layouts are fine — one in particular stands out a spread of the tower as seen from six different viewpoints, giving the viewer the impression of walking around the building. A plan with numbered directional arrows helps with orientation on the site. There are several large fold out pages of magnificent color shots to be especially noted also.

In short, this book truly tells the story of a building. With its many photographs of progress and its brief descriptive captions it comes as close to being a motion picture as possible in a book. This type of presentation of a building has long been a dream of the editors at Horizon. It is unique and very successful.

Italy's contemporary architecture

Italy Builds, By G.E. Kidder Smith. Reinhold (New York) 1955. 264 pp, illus. \$10.00. By FREDERICK GUTHEIM

THE special distinction of Kidder Smith's books about architecture is that they are concerned both with the visual and plastic aspects of architecture, and with historical facts and ideas. The result is a criticism at once informed and provocative, that appeals equally to the mind and the emotions. These are the characteristics found in his most recent work. Italy Builds. They marked equally the earlier and similarly titled volumes on Brazil (with Philip Goodwin in 1943), Sweden (1950) and Switzerland (1950). The entire series is one of the great literary monuments of our architecture today, a creative documentation of which Italy Builds is the finest expression thus far. It belongs on every architectural bookshelf. But certainly the time has come to take a longer look at the series as a whole, and the man who made it.

G. E. Kidder Smith (a name without hyphens his friends have abbreviated to the bare initials Geks - pronounced Jeeks) was born in Alabama in 1913 and

graduated in architecture from Princeton in 1935. Graduate study there with Professor Jean Labatut and field work in archeology (Antioch) shaped his historical interests and photographic skills. It also contributed to his distinctly international outlook. While he worked in New York architectural offices, and has held academic posts at Yale and other institutions, Kidder Smith's career has been predominantly one of an independent writer, photographer, lecturer, critic and public expositor of modern architecture the world over. No other person has travelled so widely, so constantly and so judiciously and produced so much to record his experiences. In addition to his black and white photographs, Kidder Smith's startlingly fresh and beautiful Kodachrome slides have given a fresh sense of the exotic in architecture to delighted audiences throughout the world.

The idea that modern architecture has significant historical roots needed substantiation of this sort. It was part of the early dogma and esthetic of mod-

ern architecture that it represented a clean break with the past. Not merely was the period itself one in which people were saying "history is bunk" but history had become synonymous with a stultifying academicism that had to be cleared away before anything new could take root. Of course, even in the late 1920's critics of disctinction like Walter Curt Behrendt could be found to deny such a preposterous assertion as the irrelevance of history. Nikolaus Pevsner's historical presentation was never really the critical paradox it pretended to be. But the main stream of architectural criticism emphasized innovation rather than continuity. And if history was to be recaptured so that modern architecture could use it, or even so that it could be understood as a movement and a style, history would have to be rewritten. There have been many responses to this need. The principal international interest of Architectural Review derives from its essays on this direction, to mention but one. Certainly the basic contention of Kidder Smith's

(Continued on page 62)

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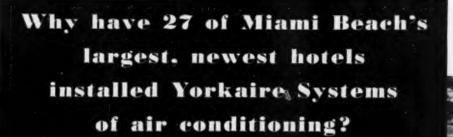




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30

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REQUIRED READING

(Continued from page 58)

books, and the principle that determines their arrangement: the idea that the whole sweep of historical architecture in any land from the earliest indigenous folk architecture must be considered as source and inspiration for the most modern building, is a part of the revived interest in a new kind of architectural history. But what a new kind of history is this! In his photographs, hardly less than his pungent text, there is little of the odor of the scholar's lamp and much of the atmosphere of windswept hills. huddled villages, the open road; and perhaps more of the life of the people, of the passeggiala, the sidewalk cafe, the town meeting, the festival. Here is a non-academic approach to architectural history, one sensitive in particular to vernacular architecture and to the sources of regional architecture in landscape, materials and living habits; a kind of history, one is tempted to observe, that is more like archeology than history in its willingness to face historical facts without documentation.

I have discussed these questions of method first because they are fundamental to the choice of countries Kidder Smith has selected for the full treatment (and for the many other regions like North Africa which have received something less). It is hardly accidental that they have been rich in the picturesque.

Italy Builds contains this approving quotation from Frank Lloyd Wright, "No really Italian building seems ill at ease in Italy. All are happily content with what ornament and color they carry, as naturally as the rocks and trees and garden slopes which are one with them. Wherever the cypress rises, like the touch of a magician's wand, it resolves all into a composition harmonious and complete. The secret of this ineffable charm would be sought in vain in the rarified air of scholasticism or pedantic fine art. It lies close to the earth." Of the many architectural Italies, that is the one Kidder Smith treats here. Despite its preoccupation with squares, stairs and fountains, it is the picturesque and folk architectural values that predominate. This approach and the method used make the result vulnerable as it neglects the formal aspects of architecture, and tends to ignore industrialism and world-wide social changes as architectural forces. The general and universal is pushed to one side in the admiration and concern for the unique and specific, and in the end one (Continued on page 366)

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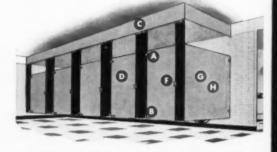


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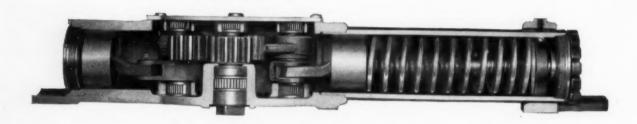
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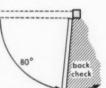
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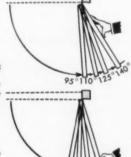
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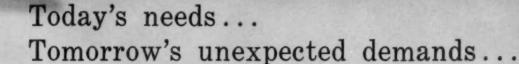
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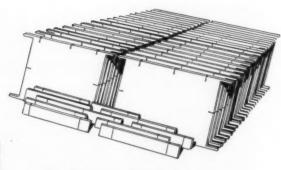


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 $\begin{array}{ccc} {\rm Type} \ {\rm A-floor} \ {\rm braced} & {\rm Type} \ {\rm AR-overhead} \ {\rm braced} \\ {\rm Type} \ {\rm B-flush} \ {\rm type} \end{array}$

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UNIFORMITY

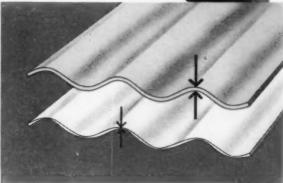
makes a big difference in Fiberglas-Plastic Panels

FILON PANELS ARE BY FAR THE MOST UNIFORM ... WITH GREATER STRENGTH AND DURABILITY. The parallel nylon strands (as shown in the magnified circle) are an exclusive FILON feature to control a uniform dispersion of Fiberglas and to add considerably to the strength and rigidity of FILON panels.





FILON'S UNIQUE MANUFACTURING PROCESS. High standards of quality are the result of extensive research for better raw materials and methods of production. FILON is produced in continuous lengths by a fully automatic electronically controlled system in the world's largest plant devoted exclusively to the manufacture of Fiberglas-Plastic panels.



UNIFORM THICKNESS FOR MAXIMUM DURABILITY. FILON'S uniform thickness prevents premature failures at fastening points. Moreover, the uniform density in color will create the most even lighting effects. FILON'S uniformity of thickness and color dispersion assures greater durability and better diffusion of light.



UNIFORM CORRUGATIONS FOR BETTER FIT. A good nesting overlap is obviously essential for a tight, waterproof fit. Rigid standards of corrugation tolerances for FILON panels give maximum assurance of satisfactory nesting and overlaps.



FILON HAS MUCH HIGHER LOAD CAPACITY THAN REQUIRED BY STANDARDS OF THE INDUSTRY. Shown above is a 26" wide FILON type 250 panel over a 4' span supporting a static load of 1820 lbs.—equivalent to 210 lbs. per sq. ft. Compare this with the 100 lbs. per sq. ft. required by industry standards.

FOR FREE ILLUSTRAYED BROCHURES containing all technical data, ideas and detailed drawings, write to Architectural Dept. of our Regional Sales Offices or consult the "Yellow Pages" under the heading "Plastic Materials" for nearest Distributor.

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Norton SURFACE MOUNTED Closer available in every size and type, for any door closer need.





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banking area or private office . . . it's weather-perfect!

Johnson Control Insures Ideal Temperatures, Provides Waste-Free Heating and Cooling Operation

A n almost endless list of comfort and convenience features makes the new 23-story Fulton National Bank Building* one of the most modern in the South. Containing over a half million square feet of bank and office space, the completely air conditioned building is the largest in Atlanta.

To provide precision regulation of the air conditioning system and insure satisfying, comfortable temperatures throughout the entire building, a specially designed system of Johnson Air Conditioning Control was installed. The temperature of the conditioned air supplied to 900 York under-window units around the perimeter of the building is controlled by Johnson Thermostats, Valves and Damper Operators applied to the primary air systems. Johnson Solar Compensators determine the correct heating or cooling effect for each exterior zone according to its exposure.

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was engineered to fit the special needs of the building and its particular heating and cooling equipment!

Whether your particular temperature control problems involve new construction or a modernizing program, the way to realize the *full* benefits of modern air conditioning is with Johnson Control. The fact that most of the nation's better buildings, of all types and sizes, depend on Johnson Control is your assurance of its unmatched superiority. Talk to an engineer from a nearby Johnson branch—his recommendations are yours without obligation.

Johnson Service Company, Milwaukee 1, Wisconsin. Johnson Temperature Regulating Co. of Canada, Ltd., Toronto 16, Ont. Direct Branch Offices in Principal Cities of the U.S. and Canada.

*Fulton National Bank Building, Atlanta, Georgia. Wyatt C. Hedrick, architect and mechanical engineer, Dallas, Texas; Sam Wallace Co., mechanical contractor, Dallas, Texas.

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Joints of Chase Copper Water Tube and Chase Solder-Joint Fittings mean a radiant heating job that <u>lasts longer!</u>

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Together, Chase Copper Water Tube and Chase Solder-Joint Fittings mean a *quality* radiant heating installation that will protect your reputation for years! On your next job, specify Chase!

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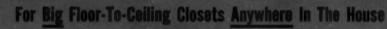
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Attractive in Appearance • Low in Cost • Easy To Install
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Easy-to-use, reach-in closets are the kind of storage space today's home buyers want . . . and Glide-All Sliding Doors are the simple, cost-saving means of providing extra space.

With Glide-All Doors you can easily and quickly build floor-toceiling, wall-to-wall expansive wardrobes, big closets in small rooms, narrow halls, confined entryways and playrooms.

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See "Sweets," and write today for full details.

Glide-All Doors are available from distributors throughout the United States and Canada.

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GLIDE-ALL The Doors For Home Improvement



Glide-All Doors make closets possible in limited space.



Wasted space areas can be handy closets with Glide - All Doors. As shown in the Hyland Manor Apartments, Hyland Builders Corp., Chicago.

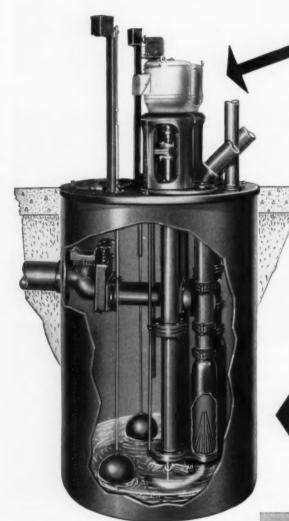


Surety Builders, Elmhurst, Illinois, used Glide-All sliding panels to make spacious hallway wardrobes like this.



Avoid pump clogging trouble....

with "FLUSH KLEEN"



Type "F" submerged
"Flush Kleen" sewage ejector

This is the only truly clog-proof sewage ejector. Only liquid is handled by the impeller. All other air or liquid ejectors have working parts in contact with coarse sewage material that causes clogging. In the "Flush Kleen" all coarse matter is strained out, then back-washed from the strainer into the higher level sewer. Of the more than 8000 "Flush Kleen" sewage ejectors used on ships, military installations, municipal lift stations, commercial and industrial buildings of all kinds, not one has ever clogged.

Protect your client — and your reputation. Guarantee owner satisfaction by specifying "Flush Kleen" sewage ejectors wherever sewage must be pumped.

OPERATING DETAILS

"Flush Kleen" sewage ejectors are usually installed in duplex units and operate alternately. While one pump operates, sewage flows into the wet basin through the idle pump. A strainer ahead of the pump impeller retains all coarse sewage matter. (see cutaway)

When the idle pump starts, the coarse sewage matter in the strainer chamber is flushed into the discharge pipe with liquid sewage.

A special check valve prevents discharges back into the inlet line.

Engineering data showing how to determine sewage ejector capacities for any type or size of building are now available. Write to Dept. A for your copy today.



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Look to Standard for DRAFTITE* weatherstripping of aluminum windows

The venting portions of all windows in this modern New York skyscraper at 112 West 34th Street are weather-sealed with Draffite . . . Brugnoni and Boehler, Architects.



The modern skyscraper, shown above, is just one of many buildings where Draf Tite wool fiber has been used as a seal around the opening perimeters of aluminum windows.

Where friction is a factor, wool fiber is the most satisfactory material for eliminating air infiltration. For proof, we can point to the many manufacturers of prime windows who have selected this material as the best weather-stripping for their products.

Standard has long been a leading supplier of this type of seal and is currently producing 250 million feet annually.

Send for our 12-page catalog...illustrating all DrafTite standard sizes and shapes for every type of metal window or door.



The Standard Products Co.
BUILDING PRODUCTS DIVISION, LEXINGTON, KY.

Projected vent-type aluminum window, as illustrated, supplied by Cupples Products Corporation, St. Louis, Missouri.

These customers will drive in . . .



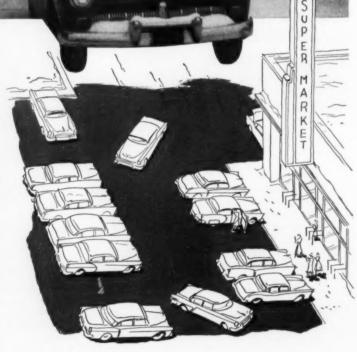
when you have snow melting!

"Not just a convenience but a distinct competitive advantage!" . . . that's what merchants are saying about snow and ice removal systems for super markets, shopping centers, service stations, department stores and other commercial establishments selling to the public.

Clean, bare driveways, parking areas and sidewalks (contrasted with snowy, slushy street approaches and uncleared competitors' places) become a strong invitation for shoppers to "turn in" . . . to do business where they are so obviously wanted. That's not just theory, but fact, proved statistically by progressive businesses where steel pipe snow melting systems are at work.

Yes, steel pipe is the first choice for these installations. The known economy of steel pipe makes investment in a snow melting system economically practical. And in service, steel pipe has a performance record proved in more than 60 years in hot water and steam heating applications. Add to this the advantages of formability and weldability for coil fabrication and you know why steel pipe is the most widely used pipe in the world . . . for snow melting, heating, plumbing, fire sprinkler systems, power, steam and air transmission.

Send for the free 32 page booklet "Steel Pipe Snow Melting and Ice Removal Systems."

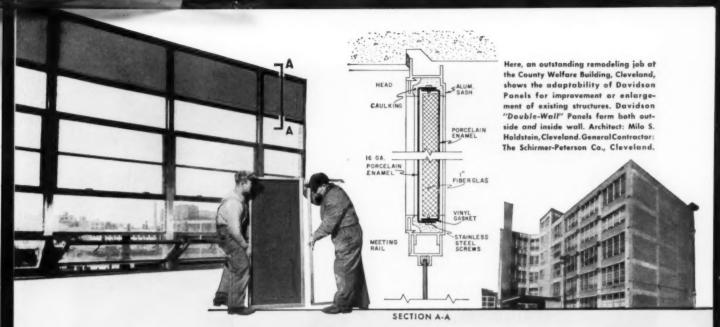


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porcelaim...

Davidson Architectural Porcelain is as flexible as your imagination. It can be used for curtain-walls, spandrels, window-walls or to accentuate structural features. It is easy to detail and offers an unlimited choice of color, shape or surface finish. As a result of long field experience and engineering development, use of Davidson Panels is practical for durable construction of any window-wall or curtain-wall. Ease of erection is winning preference for this outstanding building material.



Recently completed, Clemson College, at Clemson, South Carolina uses 26,000 square feet of Davidson Porcelain Enamel to achieve a window-wall construction that is entirely prefabricated. Davidson "Double-Wall" Panels form



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INSIDE STORY:

space saving equipment that cuts the cost of school construction!



FOLDING GYMNASIUM SEATING, Sweet's 23i

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Plan with Brunswick-Horn!

Because Brunswick-Horn folding equipment saves space, it can help you cut the high cost of school construction.

Folding gym seating, folding partitions, folding stages and folding wardrobes by Brunswick-Horn increase the usefulness of any space—large or small.

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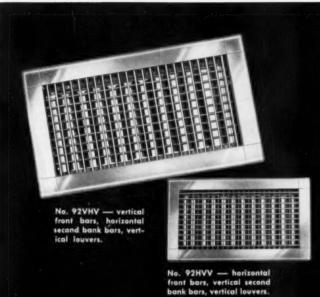


FOLDING PARTITIONS, Sweet's 22d Ho



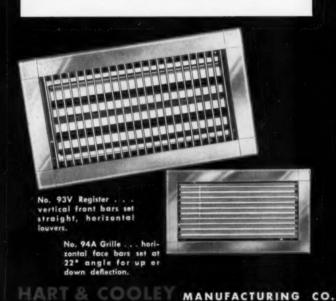
FOLDING STAGES, Sweet's Ho

THE BRUNSWICK-BALKE-COLLENDER COMPANY
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For precise Heating and Cooling control, specify
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... designed to provide any air-flow pattern you require. Here's the basic line that includes 260 possible combinations of capacity and deflection characteristics. Twenty-six standard sizes, up to 36" x 12" . . . each available in ten variations to provide almost any imaginable combination of deflections in both horizontal and vertical planes . . . plus all intermediate sizes up to 36" x 36" available on order. Face bars and louvers are both adjustable from the front of the register, and opposed louvers permit absolute volume control with equal air distribution over entire face. Finished in top quality enamel . . . modern "Decorator Grey" standard. Get complete details from your H&C Jobber, or consult our current catalog.



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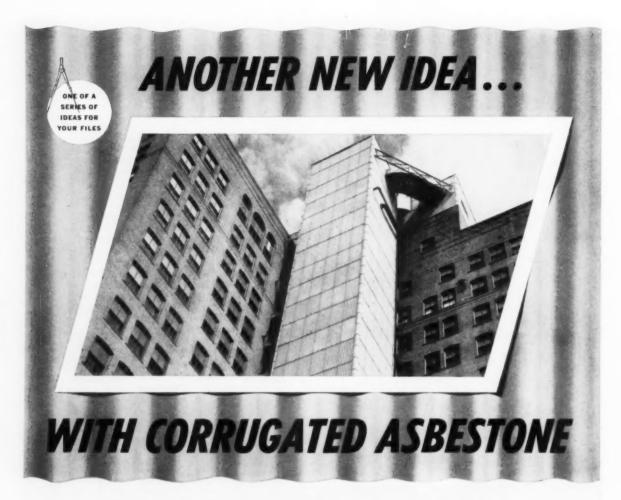
... matching return air registers and grilles. Perfect companions to the TRIPL-AIRE line, these FIXT-AIRE units are matched in quality, design, and finish. Registers feature the same positive volume control with opposed louver construction, and have a single bank of face bars in fixed vertical or horizontal position. Grilles are available with horizontal face bars set at 22° angle for up or down deflection where desired. Maximum one-piece size: 36" x 30".

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Versatile Corrugated Asbestone keeps air conditioning ducts behind the scenes

Air conditioning ducts on building exteriors can be unsightly. Gold Bond CORRUGATED ASBESTONE makes a practical housing for ducts of this sort. Installation is easy ... big, lightweight sheets go up fast. And CORRUGATED ASBESTONE has the necessary rigidity and durability to last a building's lifetime. Used for this air conditioning tower, rock-like ASBESTONE is extremely economical. It never needs maintenance...stands up against all

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How many uses can you think of for Gold Bond CORRUGATED ASBESTONE? Whether it's in remodeling or new construction, commercial or industrial, ASBESTONE creates striking good looks and permanence -means added strength and lower maintenance. Write for full details on this versatile, good looking material. Address Dept. AR-26, National Gypsum Company, P. O. Box 5257-B, New Orleans 15, La.



Gold Bond Technical Bulletin No. 2032, and Booklet No. 2273 give full specifications and uses of Gold Bond CORRUGATED

NATIONAL GYPSUM COMPANY . BUFFALO 2, NEW YORK

Build better with Gold Bond













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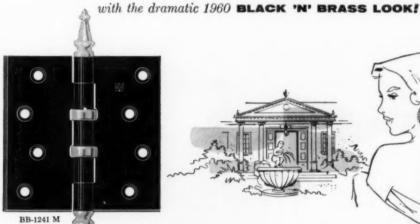
CORRUGATED ASBESTONE

In 1954....Luma-Sheen!

In 1955....the All American!...

and now...

the sophisticated high-fashion hinge



HAGER Manhattan Finish available on all Butt Hinge Classes and Sizes.

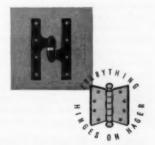
Steeple Tip



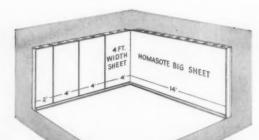
completely different looking finish, so advanced in style that it brings to the hinge industry a new, architectural, functional concept never before dared . . . or even dreamed possible...in 100 years of hinge manufacture.

The new Hager Manhattan is designed specifically for the architect or builder who has searched until now for a hinge to give the final perfect fillip to the product of his creative skill. Here is modern hinge art, design and color that opens new vistas for hinge decor in modern architecture.

In superb Black 'N' Brass, the Hager Manhattan is another bright, new Hager finish to electrify the hinge world. Include it in your plans. Specify finish symbol-Mthe Hager Manhattan . . . the hinge of distinction-for contemporary homes and decor.



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4x8 or 14x8?



In the Homasote Handbook-Page 13-the first paragraph

"Note from the above diagram that a 14-foot wall requires 31/2 four-foot sheets, and there are three joints. At every joint it is necessary to use two rows of nails and a batten strip. With Homasote Big Sheets the wall is covered in one piece, there are no joints and only one-half as many nails are required. In the average house, Homasote Big Sheets eliminate 22 joints per thousand square feet of wall or ceiling surface. To buy molding strips for those joints, nail them on, countersink the nails, putty up the nail holes and paint, far exceeds the difference in cost of Homasote. Unquestionably, it is 'cheaper on the wall'."

This paragraph is immediately followed by data on the

strength, moisture-resistance, weather proofness and resistance to air infiltration which make Homasote both efficient and economical as an insulating-building board.

This constitutes one page out of 64. The Homasote Handbook took 20 years to write - based upon 46 years' experience in the making of quality materials.

Here are the answers to 100 construction problems - of value to every architect, builder and dealer. There are 200 listings in the Index. (We cut it down

from 400 possible listings.) We are proud of this book. We have confidence in its basic value. May we send you

a copy-without cost or obligation? Kindly address your inquiry to Department B12.



COMPANY TRENTON 3, NEW JERSEY



Designing for a

BETTER INDUSTRIAL ENVIRONMENT

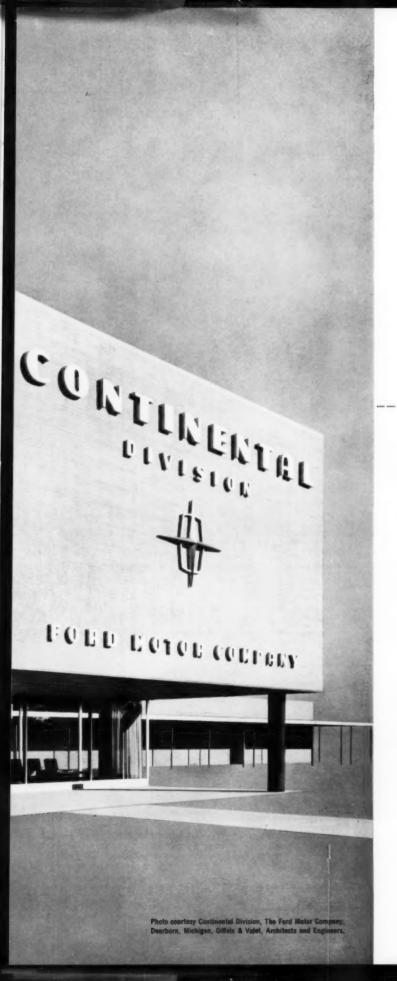
Efficient plant layout and production line facilities are still the prime requirements for outstanding factory design. But the term—"industrial environment"—is also rapidly assuming a new importance for architects.

Our expanding industrial economy has set off far more than a struggle for new products, new markets and cost-saving short cuts. To-day's management must also struggle to attract, develop—and retain—skilled production workers.

One of the most effective ways to do this is to "build in" the proper factory climate... to create a better environment for both the individual worker and the community as well.

Problems involved are many and challenging. Answers to many of them can come only from the architect's drawing board. But in arriving at solutions, he has more help than ever before in the form of new materials and new ideas.

For further technical information, write OWENS-CORNING FIBERGLAS CORPORATION Dept. 68-B, Toledo 1, Ohio





The outside face: The clean design, pleasing lawns and attractive landscaping of this Parker Pen plant at Janesville, Wisconsin, evoke community support, encourage job applications and stimulate worker pride. The factory is skilfully integrated into the community.

The industrial environment has 2 faces...

The inside face: Special lighting, functional color, sound control and insulation assure greater worker comfort, stimulate job enthusiasm, reduce employee turnover and inevitably result in more efficient production.



How to plan for greater worker

lower construction costs...and increased

On this and on the following page are pictured some of the wide range of Fiber-glas products and applications which not only contribute to an improved industrial environment, but also increase factory efficiency while reducing both original and maintenance costs.

The complete list of products available to the architect is a much larger one and should be studied carefully. All offer unique advantages.

Fiberglas (approved) contractors and applicator organizations should also be contacted in the early stages of planning. Their wide experience and specialized knowledge can be extremely helpful.



A revolution in roofing: Because it's reinforced in every direction with inorganic fibers of glass, new Fiberglas Built-Up Roofing last longer. Fiberglas roofing felts are so porous, the hot bitumen penetrates and bonds every layer into one solid, monolithic, long-lasting roof. Accepts more asphalt; reinforcement resists cracking and alligatoring. Easy to apply. Bonded for 10, 15 or 20 years! Fiberglas Roof Insulation, too, makes buildings better by controlling heat.



Comfortable working conditions at lowest cost are assured winter and summer if Fiberglas Insulation is specified in curtain wall construction. Either assembled in the field or prefabricated, it goes up fast, reduces construction and maintenance costs. Ideal for use in modern industrial buildings where low cost and maximum efficiency are especially important. Some types are up to 70% less expensive than masonry walls of equal "U" factor.



Peaceful quiet — appealing beauty: Because of its low cost, ease of application, unusual maintenance characteristics and acoustical effectiveness, Fiberglas Sonofaced* Ceiling Board is ideal for noise control in large industrial areas. Available in an assortment of finishes and sizes. John J. Flad and Sons Architects.

comfort... productivity...with





3 big jobs at one low cost: Fiberglas Acoustical Form Board for use with poured gypsum or light-weight aggregate roof deck. gives more worker comfort and offers greater product superiority because it's (1) a form board for the roof deck; (2) a highly efficient roof insulation for most "dry" occupancies; and (3) a fire-safe acoustical ceiling. Fiberglas Acoustical Form Board cuts heating costs in winter and improves worker comfort both summer and winter.



For insulating and quieting ducts, Fiberglas offers a special insulation for every shape—round or rectangular—for inside or outside. There's a form for every purpose—Fiberglas Board Insulation; or Flexible Duct Insulation; Vapor Seal for air conditioning and cold storage installations; and flexible or rigid Duct Liners for interior usage. All of these Fiberglas Duct Insulations are easy to apply, dimensionally stable and offer high efficiency.



Low-cost sound control: By employing Fiberglas Noise-Stop Baffles you can hush distracting plant noise at just a fraction of the cost of standard acoustical ceilings. Fiberglas Noise-Stop Baffles are preformed Fiberglas boards covered with a washable, paintable plastic. They can be easily installed despite interference from overhead lighting fixtures, from girders, sprinklers or from rigging. The baffles are light in weight and are rated non-combustible.





Better working light ... and no window breakage! To filter out the sun's harsh rays ... to give softer, more comforting light to all work areas ... specify window glazing of Fiberglas*-Reinforced Plastic. Gives cheerful psychological lift to workers. Ideal for industrial installation because they're shatterproof, breakproof. They offer better insulating effectiveness than glass.

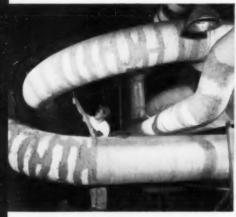
Keeps cold pipes dry: Fiberglas Dual Temperature Pipe Insulation is ideal for pipes carrying cold fluids through humid areas. Because it has its own integral vapor barrier, it (1) seals out moisture that could condense on the pipe and freeze; and (2) serves as a highly efficient thermal barrier. Keeps liquids at proper temperatures. White or black jacket to meet plant conditions.

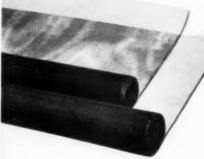




Keeps air fit to breathe: A bank of Fiberglas* Dust-Stop* air filters keeps all nuisance dust and 97% of all allergy-producing pollen out of the working areas. Fiberglas filters are extra efficient because they trap impurities all through the filter—not just on the surfaces! Fiberglas also makes the leading filters for air conditioning units and forced air furnaces.

For low-temperature installations: Fiberglas AE Board and PF Board not only offer insulating superiority, but because less thickness is required, they make extra storage space available. Dry walls stay dry. They are sanitary and durable—clean, odorless, won't rot. Fire-safe. Proved in use in thousands of installations.



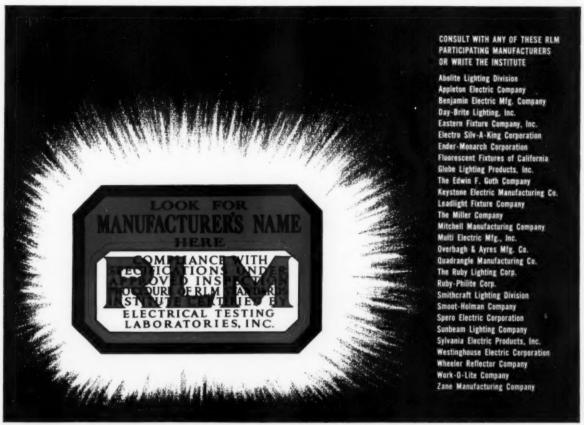


Keeps heat where it belongs! Super-heated steam pipes pose accident problems, make working conditions difficult. Kaylo® Insulation gives complete protection up to 1800°F. Can be taken off for pipe inspection and replaced without crumbling! Other Fiberglas insulations available for all other industrial requirements.

©T.M. Jowns Illinois Glass Co.

A revolutionary new kind of screening! New Fiberglas Reinforced Screening is ideal for industrial use because it gives lifetime protection without maintenance. It's rust-proof, bulge-proof, stain-proof, and fire-safe. Resistant to corrosive fumes and acids. Weather-proof—lasts year after year. Ideal for lint screens in textile plants.

Pilbergian, Duct-Stop and Sociofered one trade marks (Sing, U.S., Pat. Off.) of Owens-Corning Pibergian Occupanism.



IT'S NOW MORE IMPORTANT THAN EVER to remember:

there is NO SUCH THING as an "RLM Type" Industrial Lighting Unit!

Either an Industrial Lighting Unit is RLM-Certified or it is not. The only way to be sure is to see the RLM Label. And, because today's RLM Specifications (some of which are listed at right) are higher than ever, it is more important than ever before to look for the RLM Label. Only those lighting units which are consistently proved—through Electrical Testing Laboratories inspection—to embody these higher specifications uniformly from reflector to reflector are permitted to bear the RLM Label. It is especially important for all those who buy, use, specify or sell lighting equipment to take

advantage of these higher-than-ever RLM Specifications. More than ever before, these new specifications contribute to uniformly satisfactory industrial lighting equipment performance. The 1956 Edition RLM Book includes all the newly-established and revised RLM Specifications. It is available FREE upon request from: RLM Standards Institute, Suite 827, 326 West Madison Street, Chicago 6, Illinois.

RLM Specifications are HIGHER than ever on such points as these:

INCANDESCENT and FLUORESCENT:

- New High Reflection Factor
- New High Light Output

FLUORESCENT:

- All-White Porcelain Enamel Reflectors
- Upward Light for more Brightness Control
- Shielding Angles for less Lamp Glare

R-1209

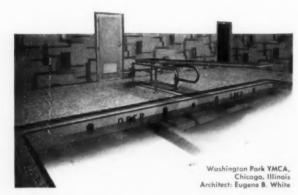


swimming pool details by Suntile

Suntile offers you all the time-proved advantages of ceramic tile for swimming pools plus fresh design quality.

> You'll find that Suntile's wide range of colors, textures and sizes provides unusual latitude in creating patterns, murals and other decorative effects in tile.

The smaller sizes and durable, slip-proof matt-finish of Suntile Satinized Ceramics make them especially appropriate for pools.



Northeastern Branch YMCA-YWCA, Norwood, Ohio Architects: Potter, Tyler & Martin ready to serve you... OUR SPECIAL DESIGN STAFF Our trained ceramic designers, headed by Harry Macke, can convert your tile design ideas into working drawings for the tilesetter, or if you prefer they will submit design suggestions for any area. There's no charge for this service. Just send us sketches, plans or elevations, and a brief description of your tile requirements. Typical swimming pool detail prepared by our Special Design Staff. the CAMBRIDGE TILE mfg. co. Dept. AR-26, P.O. Box 71, Cincinnati 15, Ohio

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Sidewall and Ceiling Grille



- Handles Cooling and Heating Air Patterns with Equal Efficiency.
- Positive Shutoff . . . No Damper Required.
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The cost of labor and equipment needed to keep non-carpeted floors at an accepted maintenance level averages \$383 per 1,000 square feet annually, in heavy traffic areas. Carpet averages only \$189 per 1,000 square feet a year — a clear saving of \$194 a year for each 1,000 square feet, or 50.7%.

Industrial Sanitation Counselors, maintenance en-

gineering specialists, whose clients include Lever Brothers, Ford, and many other blue-chip companies, based these figures on their own field work, which shows that carpet cleans so inexpensively because it cleans so easily.

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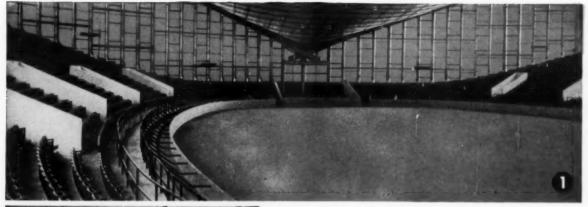
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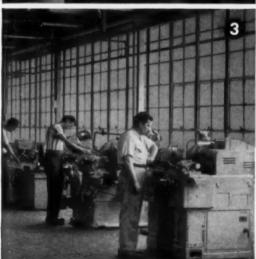
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made by Blue Ridge Glass Corp.

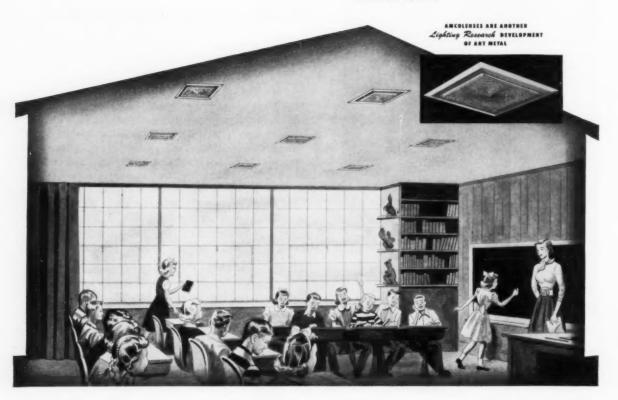
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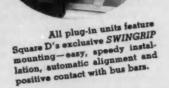


How well you know it-service entrance requirements have skyrocketed! More circuits needed! A greater variety of circuit combinations needed! This has been the problem -how to get the device with exactly the right combination of circuits, when you need it. Now, Square D gives you the answer-plug-in fusible circuits!

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Boxes, interiors and fronts, as well as packaged plug-in 200 ampere main pullout. units (plug fuse or pullout types) are available off-the-shelf from your Square D distributor—right now!

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Hangar 8 at Idlewild was designed by the Port of New York Authority. General contractor: S. S. Silberblatt, Inc., New York City.

LONGSPANS HELP GIVE RIGIDITY TO CANTILEVERED HANGAR ROOF

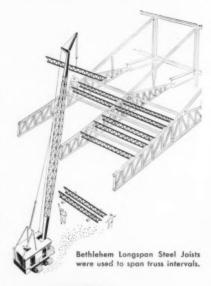
The unusual roof construction of Hangar 8 at New York International Airport, Idlewild, allows for storage of nearly twice as many transports as the conventional bowstring truss roof. The hangar, constructed by the Port of New York Authority, houses airplanes of the United Air Lines fleet.

The structure, 440 ft long, has a 99-ft wide, two-story shop and office core in the center. Columns, projecting above this center core, support by suspension steel roof trusses cantilevered out 133 ft on either side, forming two huge bays, 440 ft by 133 ft, with no supporting columns.

Bethlehem Longspan Steel Joists were used to span truss intervals. The steel joists contribute to the necessary rigidity of the cantilevered roof sections, and also support the light-gage steel decking overhead. They reached the job site ready for immediate placing and field-welding secured them permanently and rigidly in place. Bethlehem steel joists also contribute to the fire-resistant construction of the hangar.

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A BIG brushful

We can readily sympathize with you designers of today's structures! There are so many new materials, and such great ranges of application, the choice must often be difficult to make. It certainly applies to the field of surface finishes, with its galaxy of vinyl and alkyd paints, epoxy-based finishes and odorless finishes, to mention only a few of the newer products.

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Possibly you are not familiar with such outstanding developments as the new Devoe Wonder-Pruf Masonry Finish (Pat. Pending); Devoe Vinyl Wonder-Tones (the world's fastest indoor wall paint); and the wear-defying Devran (epoxy) finishes. We'll be glad to send you information on all of them.

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The problem was a common one: Design a low-cost building that would look good, and be easy to erect. Faced with this three-way challenge, the architects of the Hudson Pulp and Paper Research and Engineering Bldg. in Palatka, Florida, turned to Brown & Grist for the solution.

Brown & Grist Aluminum Window Walls turned the trick. They offered beauty, quality and flexibility of design. Installation cost was below that of masonry walls. They could be erected with the speed and ease of prefabs.

This new type aluminum wall construction can help solve your problems, too. They meet every principle of sound construction. They allow you a flexibility never possible with old style walls. Panels can vary from sheet asbestos to handsomely colored porcelain aluminum. Venting and operating arrangements can be designed to suit your needs.

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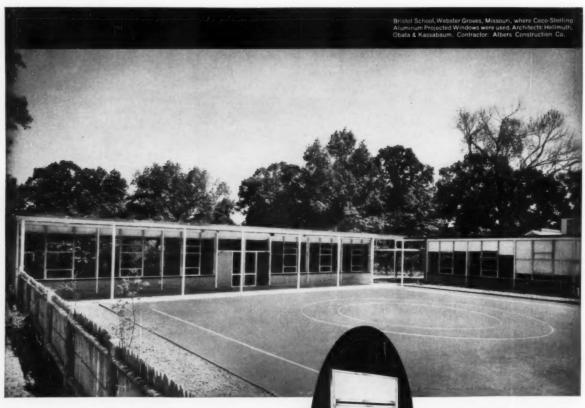
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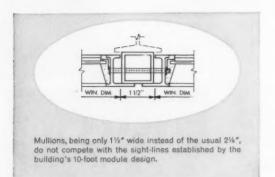
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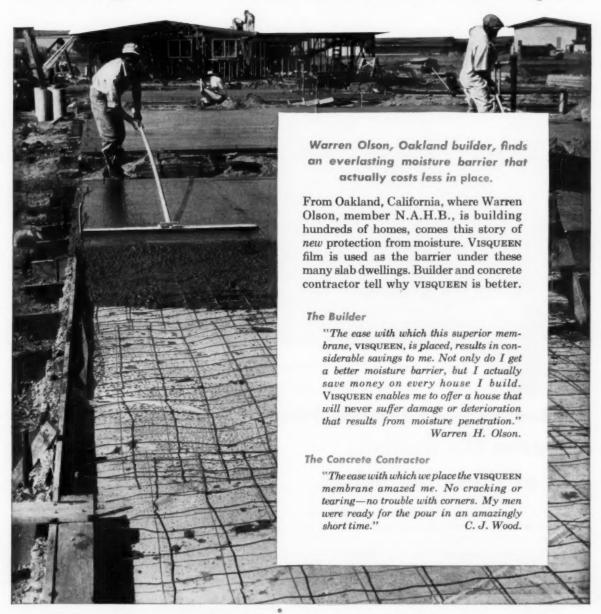
It's a combination of many things-some aesthetic-some functional-that determines the winner of a top award in a national school competition. So it was with the Bristol School, Webster Groves, Missouri, which received an award of merit from the American Association of School Administrators. The aim of architects Hellmuth, Obata & Kassabaum was to create an attractive environment centered around the physical and psychological needs of young children. Much thought was given the site and building position. Good illumination came in for careful study, and here Ceco-Sterling Aluminum Projected Windows were used for maximum daylighting. Ceco engineers worked closely with the architects in developing a tubular vertical mullion to achieve an extra narrow sight-line. All in all, the windows complemented the architectural concept. Since aluminum never needs painting, maintenance savings were assured. So-on your next project, consider Ceco's broad line of windows. They offer the variety and craftsmanship to meet your window requirements. (****)

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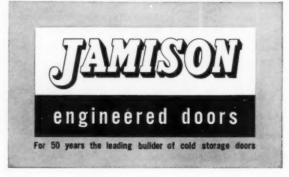
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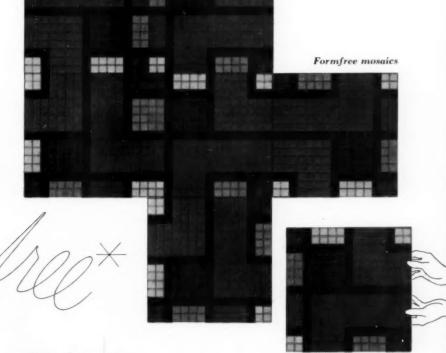
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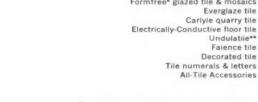


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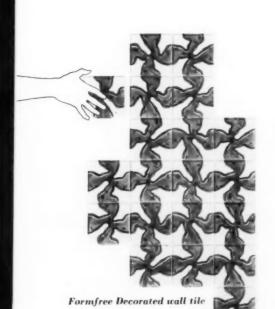


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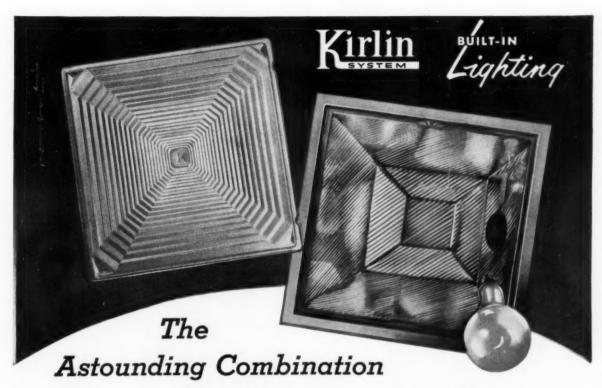
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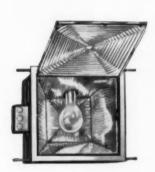
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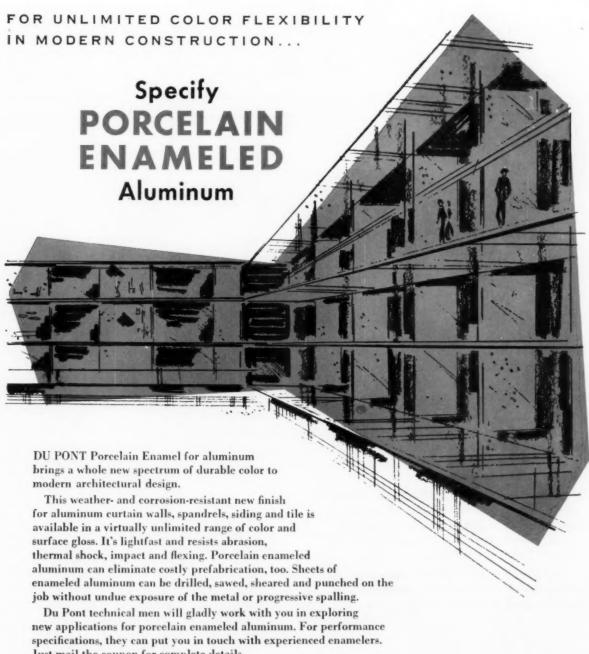
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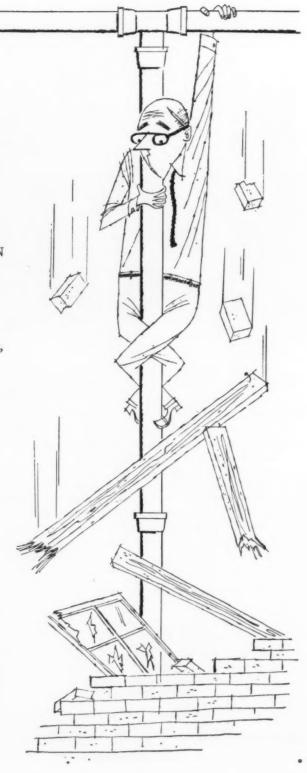
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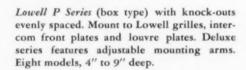
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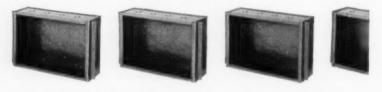
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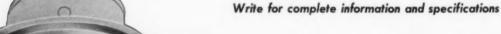
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structurally sound . . .

STARK glazed facing tile

When Stark Glazed Facing Tile has been installed your clients see it only as a beautiful, maintenance saving ceramic finish.

MANU STATES CORNEL SALES AND STATES STATES SALES SALES

But you can remind them that its value is more than surface deep, that it also builds a structural wall with the strength and dimensional stability that only hard-burned clay can offer.

This double value puts Stark Glazed Facing Tile in heavy demand. To assure on schedule delivery, specify colors, sizes and shapes as far in advance as possible, and urge your contractor to order early.



REMEMBER "STARKy"—the Facing Tile trade-mark that means top quality, backed by Stark's 50 years' of manufacturing experience.



STARK CERAMICS, INC.

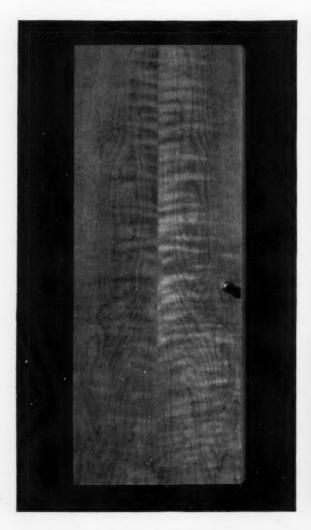
Canton 1, Ohio

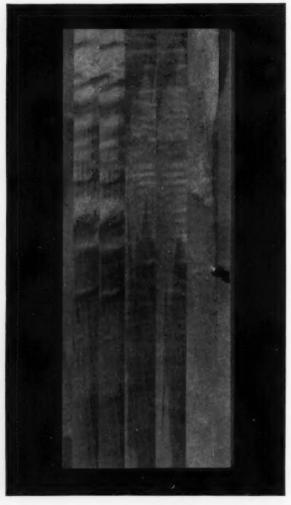
14305 Livernois Avenue, Detroit 4, Michigan • 15 East 26th Street, New York 10, N.



...this is a Curtis New Londoner







These two photographs will quickly show you why Curtis New Londoner hollow-core flush doors have a special beauty which has earned them the epithet "Pictures in Wood." The New Londoner door at the

The New Londoner door at the left has the matched grain pattern—the carefully selected "figure"—which makes these doors famous.

The door at the right is a reject and cannot be called "New Londoner." Curtis New Londoner doors are

Curtis New Londoner doors are as good as they are beautiful. Rigid torture tests—and experience of more than 5,000,000 installations—prove that these doors stay flat—perfectly aligned—regardless of use, weather, or temperature changes.

Curtis New Londoner hollow-core flush doors and all Curtis Woodwork are sold by leading lumber dealers. They are made in several woods and in most stock sizes. For literature and name of nearest dealer, write Curtis Companies Service Bureau, Clinton, Iowa.

NEW LONDONER FLUSH DOORS

CURTIS

W O O D W O R K

Texas bank makes sound investment...

a KOPPERS BONDED ROOF

The new quarters of the Republic National Bank dominate the Dallas skyline. This 36-story skyscraper is the tallest building in the entire Southwest.

Architects wanted only the best in roofing to protect this \$25,000,000 structure. By specifying Koppers Built-Up Roofing, they knew the roof would provide long, trouble-free service under every climatic condition. This proved to be a sound investment for Republic National, for Koppers has guaranteed the performance of these roofing materials for 20 years.

Actually, this is a conservative guarantee on Koppers part. Many Koppers Pitch and Felt Roofs have been giving owners good service for more than 30 years. Much of the credit for this long service life goes to coal-tar pitch—the basic ingredient in Koppers Roofs. This product is famous for its waterproofing and self-healing qualities.

Get the superior protection of Koppers Roofing for your next commercial, industrial or residential building. Full information on request, or see our specifications in Section 7a—Sweet's Architectural File.

Architects: Harrison & Abramovitz, New York, New York Gill & Harrell, Dallas, Texas

General Contractor: J. W. BATESON Co., INC., DALLAS, TEXAS Roofer: DOUGHERTY ROOFING Co., DALLAS, TEXAS



KOPPERS COMPANY, INC., Pittsburgh 19, Pennsylvania

DISTRICT OFFICES: BOSTON, CHICAGO, LOS ANGELES, NEW YORK, PITTSBURGH, AND WOODWARD, ALA.

SPECIFY KOPPERS FOR LONG-LIFE ROOFING



BOND CLOTHING STORE BOSTON,

BOSTON, MASSACHUSETTS

Sumner Schein - Architect

How Construction Co. - Builder

Architectural Terra Cotta in buff and harvest brown give this store a smart, modern facade. Units are 24" x 24" x 2".



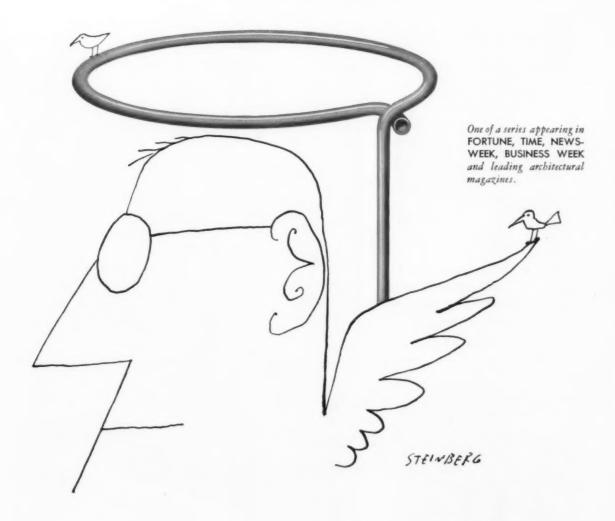
FEDERAL SEABOARD TERRA COTTA CORPORATION

10 East 40th Street, New York 16, N. Y. PLANT AT PERTH AMBOY, NEW JERSEY

Why is Architectural Terra Cotta specified so often for store fronts?

Quality, appearance, permanence and price combine to give Architectural Terra Cotta its widespread popularity. Custom-made by Federal Seaboard, it is adaptable to any design... and combines impressively with other materials. You have a vast selection of colors and textures from which to choose... for decorative panels, sculpture or plain surfaces. With Architectural Terra Cotta you can give character and color to new or remodeled buildings. It is so versatile you can keep initial costs within a budget, reduce maintenance to a minimum. Simple soap-and-water washings will retain the original richness and beauty indefinitely. Write today for complete data on the modern use of Architectural Terra Cotta.

Construction detail, data, color samples, estimates, advice on preliminary sketches, will be furnished promptly without charge on Architectural Terra Cotta and Ceramic Veneer.





How to beat Old Debbil Time . . .

We frustrate Time...by forming Lewin-Mathes Seamless Tube and Pipe out of ageless Copper... heavy-walled and durable...smelted to meticulous purity in our own refinery.

We take Time... as integrated specialists, to test and check and analyze each step in production from raw material to finished product—to guarantee perfect, enduring quality.

We save you Time . . . through a nation-wide network of Service Offices and Mill Depots, linked by Teletype, to assure *on-schedule* deliveries.

The Time you take to specify Lewin-Mathes for your Copper Tube and Pipe applications will be to your everlasting credit—and satisfaction!





Split Block is Making Progress as an Acceptable Construction Material for Homes, Motels, Commercial Buildings and Other Types of Structures.

The use of split block is increasing rapidly. And with good reason. This beautiful and rugged building material offers innumerable opportunities to builders in all classifications. Not only has split block the appeal and durability of fine quarried stone, but it goes far beyond stone in its adaptability to various types of construction.

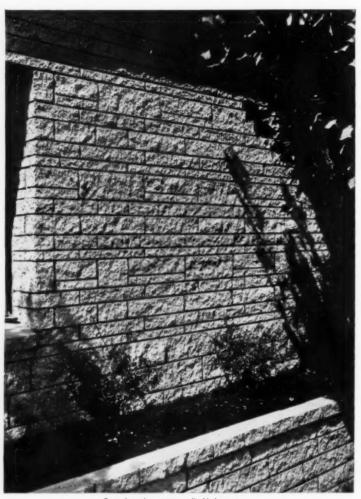


Split block gives both small and large homes that distinctive stone masonry appearance.

With split block, the designer has a wider range of color, texture, and proportion with which to meet new ideas or cost problems. Split block can be used as solid masonry, veneers, cavity and solid walls, fireplaces, planters—for interiors as well as exteriors, for commercial structures as well as homes. In fact, there is perhaps no other building material used today which is so ideally suitable to the demands of this new era in modern building.



Ranch type home built with split block. Just as attractive as approved stone, but costs less



Coursed random pattern split black — e favorite of many builders and home owners

BES-STONE—"the split block with character"—combines all the advantages of regular split block with important ones of its own. BES-STONE offers a choice of beautiful, permanent color tones, textures and patterns, in modular sizes. It offers economy and versatility in construction, freedom from costly upkeep, and a distinctive charm that lasts for years.

Colorful split black in stacked bond for living room wall. Adds beauty. Requires no painting. Challenges the creative ability of both architects and builders.



BES-STONE is a new and modern building stone, a product of Vibrapac Block Plants. For complete details and information, contact your nearest Vibrapac Plant, or write Besser Company, Box 173, Alpena, Michigan.

(Advertisement)

telescopic gym seats*

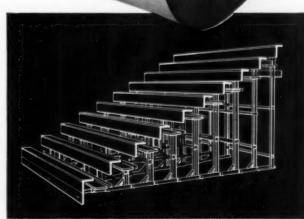
better gymnasiums deserve better seating

- MORE SAFETY—Four double vertical uprights per row put the spectator load directly on the floor, not the casters or walls.
- MORE STRENGTH—Self-supporting, free-standing steel understructure does not depend on wood members for strength.
- MORE ROOM-22" or 24" row depths, plus underseat clearance provides more toe, heel and leg room.
- MORE VISIBILITY—10½" or 11½" row rise makes seeing easier.
- LESS EFFORT—Free-floating, interlocked roller housings and supports under seats make Medart Seats easiest of all to open and close.

Write for NEW catalog

SPECIFY the best, then INSIST on it!

FRED MEDART PRODUCTS CO., INC., 3540 DEKALB, ST. LOUIS 18, MO.



*Medart Telescopic Gym Seats are fully protected by U.S. Patents



OPEN WEB STEEL JOIST

Innounces a great new advance in Structural Framing

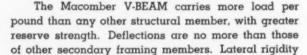


The MACOMBER

V-BEAM

STRONGER • LIGHTER • MORE RUGGED FOR SPANS TO 48 FEET

NAILABLE TOP BOTTOM CHORDS



The new Macomber V-BEAM is an advance in floor and roof framing equaled only in importance by the announcement of the original Macomber bar joist.

is appreciably increased.

Architects and Engineers will like the advanced design of the V-BEAM. Contractors will recognize the extra value their money buys.

This is a product worthy of your immediate investigation. Send for your V-BEAM Catalog.



STANDARDIZED STEEL BUILDING PRODUCTS

MACOMBER INCORPORATED

CANTON

EERING . FABRICATING AND ERECTING .

STRUCTURAL CLAY
FACING TILE
PRODUCTION

1945

UP
300%
SINCE
1945

Here's good news for architects, contractors and everyone concerned with building construction.

More Structural Clay Facing Tile will be available in 1956!

In the past ten years, growing architectural demand for this versatile material has sparked a 300% boost in plant capacity. And in 1956 Facing Tile production will expand an estimated 30% more.

Member manufacturers of the Facing Tile Institute have also improved quality while boosting output. With the cooperation of architects and builders, they hope to give the building industry even better products and service in 1956.

UP 30% MORE IN 1956

FACING TILE INSTITUTE

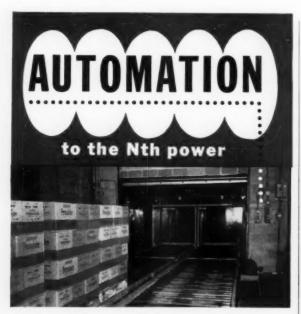
2556 Clearview Avenue, N. W., Canton 5-5329, Canton 8, Obio

In the interest of better Facing Tile construction the companies listed here have contributed to the preparation of this advertisement.

CHARLESTON CLAY PRODUCTS CO.
Charleston 22, West Virginia
THE CLAYCRAFT CO.
Columbus 16, Ohio
MAPLETON CLAY PRODUCTS CO.
Canton, Ohio
METROPOLITAN BRICK, INC.
Canton 2, Ohio
Canton 2, Ohio

MCNEES-KITTANNING CO.
Kittanning, Pennsylvania
NATCO CORPORATION
Pittsburgh 22, Pennsylvania
STARK CERAMICS, INC.
Canton 1, Ohio
WEST VIRGINIA BRICK CO.
Charleston 24, West Virginia





MATERIAL FLOW IS AUTOMATIC

into and out of special designed Montgomery Elevators installed in midwest refinery of one of the nation's leading oil companies. Power driven roller conveyors, built in the car floors, turn until car is loaded . . . doors close and car proceeds to floor indicated . . . levels automatically, doors open automatically and conveyor starts again to unload car.

proof that "SPECIAL" is standard with MONTGOMERY

Design and construction of unusual industrial elevator installations such as these palletized material handling units are regular events for Montgomery engineers. Equally unusual requirements have been met to provide elevators for giant testing machines in famous research laboratories; for cross-over bridges in plants divided by railroad tracks; in the nation's leading parking garages; in plants requiring double-duty elevators to handle widely varying loads. Unusual, yes, but you can depend on Montgomery for all types of elevators, including passenger and attendant operated electric and hydro-electric passenger and freight elevators.

... and P. M. service

Montgomery Preventive Maintenance—P. M. Service is available across the country. Provides maintenance by highly skilled, especially trained men for all types of elevators.

AR-256

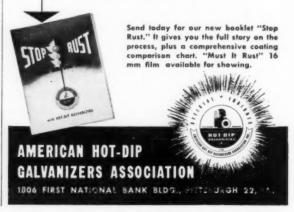


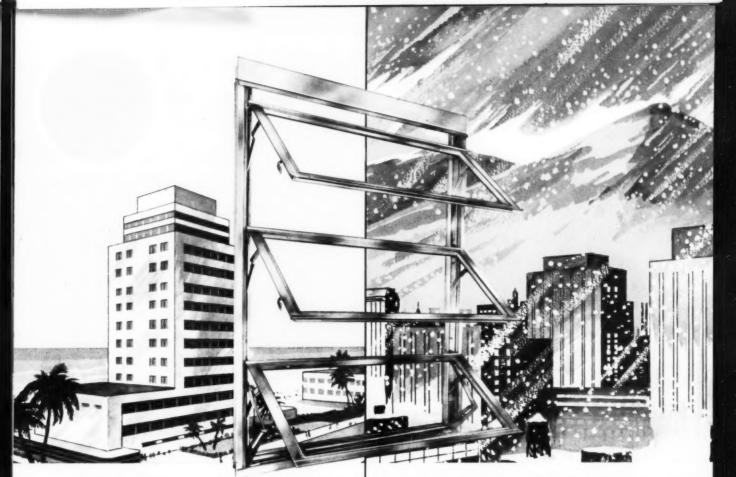


The composite picture above shows four different views of the switchyard structure recently erected at the Georgia Power Company's new Plant Hammond, near Rome, Georgia.

The structural steel in this installation, as well as the transmission line towers are Hot-Dip Galvanized. Hot-Dip Galvanizing is the best rust protection you can buy and in the long run inexpensive. Here's why—with Hot-Dip Galvanizing you get the thickest, most uniform coating with no open pores to let rust begin—thus costly maintenance over a period of years is reduced to a minimum and necessity for replacement is eliminated.

When you have a rust problem, choose Hot-Dip Galvanizing—the best rust protection you can buy. For the best in galvanizing send your products to a member of the American Hot Dip Galvanizers Association—he has the know-how to give you a top quality job.





BECAUSE LUDMAN LEADS WINDOW ENGINEERING



ASSURE TRUE CLIMATE-CONTROL

AS NO OTHER WINDOWS CAN!

THEN A

TRUE CLIMATE-CONTROL takes full advantage of Nature's milder moods, yet protects against extremes of temperature. Because Auto-Lok Windows are engineered by Ludman to be the tightestclosing windows ever made because Auto-Lok Windows open wide to the breeze completely control ventilation . . . TRUE CLIMATE-CONTROL starts with Auto-Lok Windows!

When Air-Conditioning or Heating units are operating, Auto-Lok Windows seal the heat or cold out seal the man-made weather in. A simple flip of a clip allows installation of storm windows (or screens), in an instant.

In mild weather, when windows are open, there is no equal to Auto-Lok. These famous windows provide complete control of ventilation. Both the quantity, and quality, of ventilation is controlled by Auto-Lok Windows, which open from the slightest

crack of the exclusive Night Vent, to a full opening of all vents. Auto-Lok Windows can direct entering air . . . provide fresh air, even when it's raining.

Because Ludman leads in Window Engineering, Auto-Lok Windows stand alone in performance, appearance, and endurance. Because only Auto-Lok Windows provide full control of ventilation because Auto-Lok Windows are the tightest-closing windows ever made they do both jobs required of a window for TRUE CLIMATE-CONTROL. Their many operating advantages, their long life, their rugged construction are still more reasons why so many leading architects specify Auto-Lok. Ludman Engineering Research assistance is available to architects on request.

ONLY AUTO-LOK MEETS WHAT EXPERTS* AGREE ARE THE 10 MOST IMPORTANT REQUIREMENTS IN A WINDOW

*Geoffrey Baker and Bruno Funaro in "Windows in Modern Architecture"

LUDMAN Corporation NORTH MIAMI . FLORIDA

Tuto-ok Tightest closing window ever made

LUDMAN LEADERSHIP IN WINDOW ENGINEERING

... Development of the





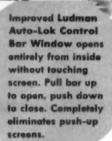


Many years ago, Ludman Engineers designed the Auto-Lok Control Bar Window to be used in public buildings like schools, hospitals and institutions. Since then, thousands of installations testify to the popularity of these famous windows. Now, comes another development in their operation and construction . . . a more simple opening and closing mechanism. Children find it easier to operate: they pull the bar up to open, push down to close . . . and all vents lock automatically.

Architects find Ludman Auto-Lok Control Bar Windows fit into their designs better than any others. No other school window can compare with its truly modern beauty. Auto-Lok is the only window that meets all ten requirements that experts* agree are essential in a window.

The Auto-Lok Control Bar Window is the tightest-closing window ever made . . . and only Auto-Lok stays tightly closed for the life of the building without the periodic adjustment required by other awning windows. Tightness is an all-important requirement in the design of a school building. Specify Ludman Auto-Lok Windows as the best insurance of your reputation for using the best building products.

* Geoffrey Baker and Bruno Funaro in "Windows In Modern Architecture".







with 26 Outstanding American Manufacturers of School Building Products and Equipment in



the traveling exhibition sponsored by the Henry Ford Museum and Greenfield Village and The Encyclopedia Americana.

"Schoolroom Progress U.S.A." is a traveling educational exhibition touring 250 major American cities with an estimated 3,000,000 persons viewing it. Featured are replicas of schoolrooms of 1840 and 1890 contrasted with the ideal classroom of today and tomorrow.

Ludman's Auto-Lok Control Bar Windows, an integral part of today's new schools, are displayed in that part of the exhibit which reveals the latest in classroom architecture for kindergarten, upper elementary, domestic science, manual science, and office practice.

Ludman is proud to participate in a project which represents a major contribution to educational thinking. Ludman invites you to see the exhibit when it comes to your city.







LUDMAN Corporation

NORTH MIAMI . FLORIDA



North High School, Des Maines, Iowa. Wetherell & Harrison, Architects.

LUDMAN ENGINEERING

One of many new schools throughout the country using Ludman Window Panels.







Skin-Wall... Curtain Wall... Panel-Wall... these are tools that progressive architects are using to change the face of America. These are the newest methods of the 20th Century — The Century of Construction. They are highly effective means by which architects are speeding up construction... reducing costs... increasing efficiency... creating dynamic new beauty... satisfying clients.

To assist the architect in benefiting from these new building techniques, LUDMAN Corporation is proud to present LUDMAN WINDOW PANELS ... Another Development of Ludman Engineering. Many architects, though tremendously interested in these newest building techniques, have had very little opportunity to become thoroughly acquainted with them. And because every architect either is, or will be, faced with the use of these new building methods, LUDMAN is making

an Engineering Service available for consultation from the moment the first rough sketches come off the board. This service is available without cost to the architect.

Now, through the great versatility of LUDMAN WINDOW PANELS, an architect may be confident that he can realize any design he may create. For, on the basic principle of integral wall units that combine window and wall in one easily-handled, quickly-fastened labor-saving unit, LUDMAN Engineering Service can capture any wall treatment the architect may wish to execute.

Here are standard production components that are adaptable to an infinite variety of designs and assure economy in construction. Ludman's Engineering staff will assist you in developing custom made panels where desired for still greater flexibility in design.

LUDMAN Window Panels are built to Ludman's usual high quality standards.

Insulated panels, plus Ludman's tight-closing windows

(the tightest closing windows ever made),

produce a wall with an unusually
low Thermal-Conductivity rating.

leads in window engineering

LUDMAN Weatherstripped

PROJECTED WINDOW



10 TIMES TIGHTER

4 TIMES STRONGER

41/2 TIMES STRONGER

Report on tests conducted by PITTSBURGH TESTING LABORATORY, Pittsburgh, Pa.

Ludman is proud to report that the results of the test by this highly respected testing organization prove again that Ludman has engineered a superior window product that will stand up under all conditions. This reflects Ludman's basic policy of thorough researching for each new product so that you can stake your reputation without hesitation on Ludman products.

LUDMAN LEADS IN WINDOW ENGINEERING



LUDMAN AUTO-LOK ALUMINUM AWNING WINDOWS

The window industry's most outstanding development....the window that has solved so many of the architect's problems.

LUDMAN AUTO-LOK WOOD AWNING WINDOWS

The same Ludman quality the same tight closure . . . available in wood windows through jobbers everywhere.



LUDMAN JALOUSIES

Ludman engineering has added more technical improvements to jalousie windows than any other company produced a jalousie you can specify with confidence.



Ludman engineered jalousies available also in doors.



YOUR PRESTIGE IS REFLECTED IN THE PRODUCTS YOU SPECIFY

The architect, as do other professional men, cherishes his prestige . . . knows it as his most valuable asset. Fine products . . . products that look better . . . perform better . . . perform well and economically for the life of the building — these are major factors in supporting the reputation of the architect. And the best products cost so little more to install . . . cost so much less across the years. Protect your prestige when you specify!

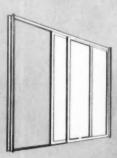


LUDMAN SINGLE SASH WOOD AWNING WINDOWS

A Single Sash Wood Unit with extraordinary design flexibility. Handled by wood jobbers everywhere.

LUDMAN ALL-WEATHER ALUMINUM SLIDING GLASS DOORS

Built to high Ludman standards . . . the only door so completely weather-tight as to be suitable for all climate use.



Please send me full information on the following Ludman Products:

LUDMAN CORPORATION . North Migmi, Florida .

Auto-Lok Aluminum Awning Windows Wood Auto-Lok Awning Windows Jalousies Jalousie Doors Aluminum Framed Sliding Glass Doors Shower Door Tub Enclosures Intermediate Aluminum Projected Windows

Single Sash Wood Awning Windows

 Name
 ...

 Street
 ...

 Zone
 ...

 State
 ...



LUDMAN SHOWER DOOR

Top quality fibreglass panels set in beautiful Anodized Aluminum Frames. LUDMAN QUALITY CONTROLLED.



FLORA BALLAST* SHOWS how easy it is to make across-the-counter in-warranty replacement of G-E ballasts at no cost to you, from your

nearby G-E Ballast Service Center Distributor. They carry ample stocks of G-E ballasts from which you can select replacements for any make ballast.

Flora* explains how . . .

More Than 800 G-E Ballast Service Centers Help You Save Lighting Dollars

When it is necessary to obtain an immediate ballast replacement you'll get prompt service at the G-E Ballast Service Center Distributor located nearest you. The complete stocks and convenient location help you save time and money. There are G-E Ballast Service Centers in every major city—more than 800 of them in the United States. Here you can make NO CHARGE in-warranty replacements of G-E ballasts . . . and replace any make

ballast with a high quality G-E unit. And G.E. gives you top quality at low attractive prices too. Save time and money—solve your ballast replacement problems at your nearest G-E Ballast Service Center.

When you buy G-E ballasts you get other services too. G.E. maintains a network of national warehouses to speed volume orders. More than 150 trained sales engineers from G-E Apparatus Sales Offices are available to give you help in

applying G-E ballasts and in servicing G-E ballast installations.

A G-E ballast tag or sticker on your fixture is proof that it is equipped with the best in ballast value. It's the easy way to be certain. For a complete presentation on G-E ballasts, contact the G-E Apparatus Sales Office nearest you or write Section 401-16, General Electric Company, Schenectady 5, New York.

*Miss Fluorescent Ballast, G.E.'s Ballast Mascal Copyright 1955, General Electric Company



GENERAL ELECTRIC IS YOUR BEST BALLAST VALUE

- EXCLUSIVE SOUND RATING SYSTEM
- SUPERIOR QUALITY CONTROL
- LONGER BALLAST LIFE
- PRECISE LAMP-MATCHED DESIGN
- PROVED PRODUCT LEADERSHIP



Progress Is Our Most Important Product

GENERAL & ELECTRIC



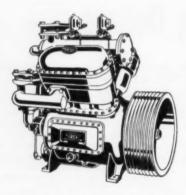
EXPERIENCED G-E BALLAST ENGINEERS are available to help you plan and service fluorescent lighting applications. For help, contact your nearest G-E Apparatus Sales Office.



AIR CONDITIONING

Installed in Building Designed by Frank Lloyd Wright

The unique Price Tower, in Bartlesville, Oklahoma, is the new home of the H. C. Price Co., Pipeline Constructors. Rising



Four of these "ECLIPSE" compressors carry the air conditioning load for the Price Tower Building, Bartlesville, Oklahoma.



nineteen stories (190 feet), this revolutionary structure is already famous in architectural circles. The floors, which include both offices and apartments, are supported in cantilever fashion from four vertical columns.

All nineteen stories are air conditioned with refrigeration furnished by four "ECLIPSE" compressors—sold and installed by Kay Engineering Co., Frick Distributors at Oklahoma City. W. A. Landers Co., Oklahoma City, Mechanical Contractors.

Frick industrial and commercial refrigeration and air conditioning—famous for over 70 years—are the choice of discriminating architects, engineers and contractors.

Address all inquiries to your nearest Frick Branch or Distributor, or direct to



builds anything

with greater simplicity

because attachment is to

both sides of the channel-

completely demountable...reusable

KINDORF

A PRODUCT OF STEEL CITY ELECTRIC COMPANY

Send for the Kindorf catalog

KINDORF

PITTSBURGH 33, PA.

ATTENTION!

You should inspect folding chairs like a first sergeant because folding chairs must do battle as required of no other furniture. Here are some of the CLARIN advantages . . . inspect them before you decide.

CLARIN CHAIRS BUILT

Proper angle of seat to back has been scientifically determined to assure correct posture.

Wood Seats are in all Clarin chairs for comfort, durability and health's sake. Completely enclosed by a steel frame yet easily removed and turned over for a "factory fresh" surface.

Double tube and channel construction is far stronger than single tube. Pivot holes are always in channel, not in

Solid steel rivets are used at all pivot points for extra long life.

X-type frame is superior in strength to cheaper Y-type design...is self-leveling and will absorb extreme shock.

Spot welding of stationary metal to metal contact points eliminates rattle and noise of riveted construction.

Patented rubber feet wear much longer than common crutch type, slip-over feet. Foot is molded over tensioned designed, brass plated prong that cannot be removed by hand.

> Guarantee date stamped in steel is obvious assurance that you purchased the best." Every Clarin chair is guaranteed against breakage for len years.

QUALITY IS THE ONLY TRUE ECONOMY...AND

SINCE 1925

TO STAND RIGID INSPECTION ...

Over fairty years of experience have proved to us that higher quality and more stagged construction must go into folding chairs then into permanent seating. That's why CLARIN Folding Chairs have all of the quality advantages you see see the apposite page. When it's year responsibility to specify or purchase folding chairs, it's a good thing to know that CLARIN chairs will not accidentally cultapus it stood upon, and that CLARIN chairs will rot accidentally cultapus it stood upon, and that CLARIN chairs will rot accidentally cultapus it stood upon, and that CLARIN chairs can be set up and taken down in shorter time and draft bossues they fold flat within tonir farms, they can be attered in 50 MeV. Jesu space. There are over 65 different models in the CLARIN lane, so there must be a model or models just right for your needs. Why not write for a catalog now?



Juvenile folding chairs correct for every age—seat heights graduate each lach from 12" to 18".



A folding chair for every purpose—wide selection of models and colors—choice of seat and back uphalstery styles.



Tablet Arm Folding Chairs serve many needs—ideal for lectures, group meetings, training classes, adult education, etc.

New Prudential Buildings Feature QUIET with Acousti-Celotex Tile on Acousti-Line* Suspension System



Office in Jacksonville Prudential Building, showing typical Acousti-Celotex Sound Condition

Prudential Buildings are models of engineered effectiveness. More than 1,000,000 square feet of incombustible Acousti-Celotex Perforated Mineral Tile, Celotone Tile, and Acousteel metal pan were applied. The Acousti-Line Suspension System, on which Acousti-Celotex Tile was installed, offers two additional functional benefits: Complete flexibility of ceiling units ... tile, lights, air diffusers, etc. ... permits interchanging for unlimited variety of office layouts and arrangements. And easy access is provided to above-ceiling areas for servicing of lights, wires, ducts, plumbing, other utilities. This combination of beauty, functionalism,

Acousti-Celotex Sound Conditioning installations in the

and acoustical efficiency represents modern sound conditioning and ceiling design at their best ... well in keeping with the most advanced architectural achievements.









Products for Every Sound Conditioning Problem—The Celotex Corporation, 120 S. LaSalle St., Chicago 3, Illinois • In Canada: Dominion Sound Equipments, Ltd., Montreal, Quebec.



Prudential's Southwestern Ho Office, Houston, Texas Architect: Kenneth Franzheim.

FOR FULL DETAILS on the complete line of Acousti-Celotex products, please write to the Celotex Corporation, Dept. B-26 120 S. LaSalle Street, Chicago 3, Illinois, or consult Sweet's Catalog Service.





Write for our A.I.A. Brochure showing complete details

CURTITION CORPORATION • Dept. AR-26, 2227 Sawtelle Boulevard, Los Angeles 64, California



110 Pear Street, S.E. • Atlanta 15, Georgia

Write for this Catalog

The Story of The Scientifically-Built HOLLOW FLUSH DOOR.





The World's Finest!



TEE-COR HOLLOW FLUSH DOOR

MORCAN Company · Oshkosh, Wisconsin

A-1-A FILE 19 E 12



MARLITE WALLS IN THE HOME

... provide years of care-free luxury!

Imaginative Colors and Patterns—Marlite paneling makes modern homes more modern . . . and keeps them that way for years to come. Beautiful "Companion Colors" styled by Raymond Loewy Associates plus distinctive wood and marble patterns (authentic in every detail) provide a wide choice of decorating schemes from traditional to contemporary.

Practical Beauty without Costly Maintenance—Marlite's melamine plastic finish shrugs off dirt, grease, mois-

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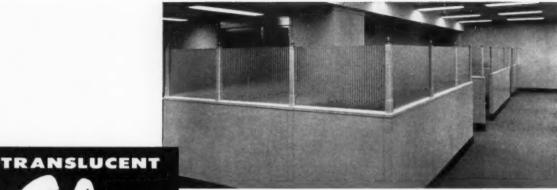


STORE FRONTS

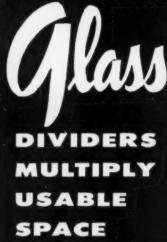
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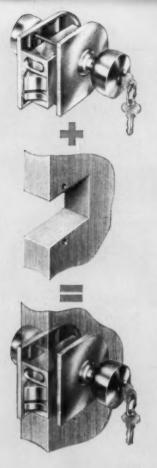
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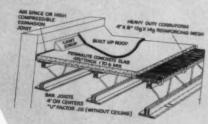
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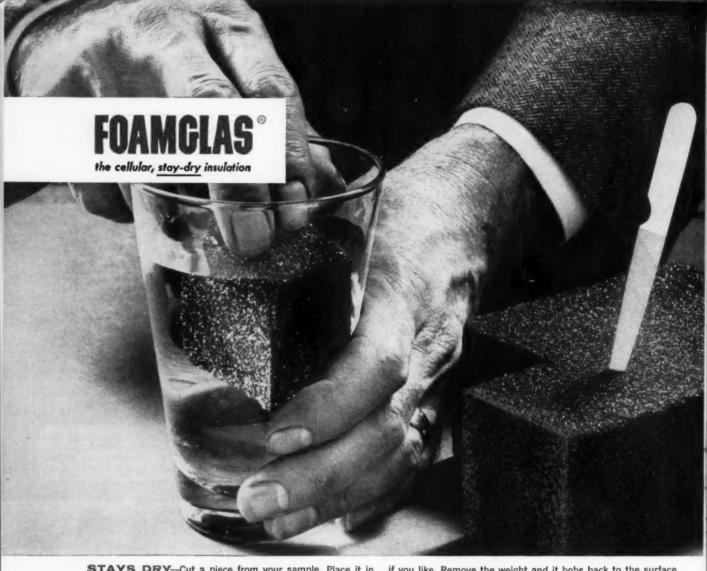
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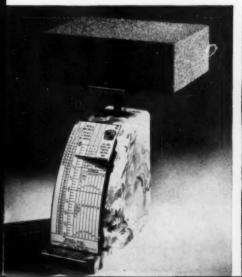
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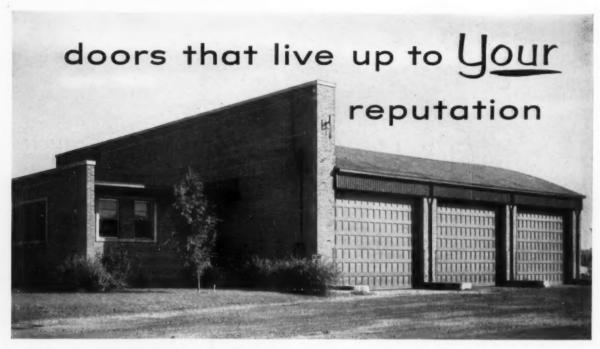
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This Descender has a capacity of 500 lbs. and was specially designed for window washing service on this modern building. It is electrically operated by pushbuttons on the platform for up and down and horizontal movement. This machine moves on a track and when not in use is backed out of sight by means of a

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There's a fresh, modern look in metal pan sound conditioning. Armstrong Arrestone's new Full Random pattern of vari-sized perforations gives the finished ceiling a distinctive, non-directional effect. This attractive styling offers you new decorative freedom in creating modern interiors never before possible with a metal pan acoustical material.

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THE H.C. PRICE TOWER PINS

FRANK LLOYD WRIGHT

Architect of the Tower

This gentle skyscraper has escaped the big city to live in an American town in the country . . . To stand there in its own park, casting its own shadow upon its own ground. Reflected in a long slender pool it affords everyone everywhere in it a beautiful view of the rolling countryside that is Oklahoma.

The "skyscraper" in itself, where there is space, is a proper American circumstance; a triumph, not of landlordism, but of our own best technology. It should be a triumph of our architectural artistry as well. But such is not the case. The skyscraper of the big city where skyscrapers crowd upon skyscrapers is a rank weed in what otherwise might be a wholesome garden. The American skyscraper belongs, rather, to our smaller American towns like Bartlesville, where there is still a chance for the spirit of man to live and express itself in a free community that offers a better future to American democracy. The big city of today is servile and doomed by the eternal law of change.

This instance of the tall building in the country now seems to me to be one proper step on the way toward the inevitable, planned-decentralization of the giant-city: the city—a greedy monster—now being undermined by its own extravagance. The unplanned nature of this overgrown old pattern of the city—now so overcrammed with mechanized merchandise—is being accelerated to extinction by its own contrivances. This old pattern is not for the modern free-world of democracy.

Look at this American skyscraper now upright in the American countryside. A natural! Its glass is protected by wide projecting copper blades (or blinds) and tinted gold. The occupant is not only protected against actinic exposure; the whole building is itself shielded against weather. This copper shielding is for the liberation, comfort, and pleasure of those who live and work in the building. Glass is here a blessing to the occupants.





Joe D. Price

Glass, the modern miracle, used according to human nature. That would mean used with architectural artistry.

Why not American buildings now as spirited as Mont St. Michel yet as scientific and utilitarian in nature as the automobile, the steamship, or the airplane?

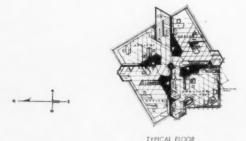
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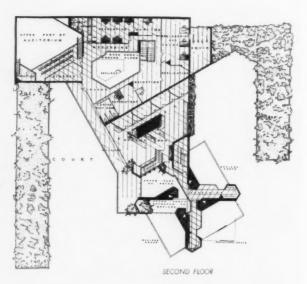
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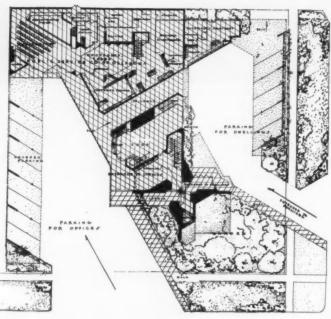
Plans reproduced by courtesy of Harizon Press, publishers of the book, The Story of the Tower, by Frank Llayd Wright, to appear this month. See book review, p. 58.



TYPICAL MEZZANINE







GROUND FLOOR

HAROLD C. PRICE

Owner of the Tower and head of the H. C. Price Company:

The decision to engage Frank Lloyd Wright as the architect for an office building for the H. C. Price Company was prompted by our belief in his ability to create for us and our community a structure of great and lasting beauty.

We were of the opinion that an office building could be made beautiful without affecting its proper functioning. It seemed to us that nearly all office buildings have followed a stereotyped design — with variations — though many have proven very impressive upon completion.

It was not our intent to build a monument. We simply wanted a functional office building that would possess a natural beauty brought about through outstanding design. We wanted a building of which our city would be proud. We believe that we have obtained the desired result.

Working with Mr. Wright and his Fellowship over a period of three years has been a liberal education in the appreciation of the arts of decorative and functional design.

During the construction of a building, the client and Mr. Wright do not always agree. When Frank Lloyd Wright is certain he is correct, he objects to change. But, if the client has logic in his argument, Frank Lloyd Wright will readily consider any sensible changes suggested.

We particularly noted that Mr. Wright is never bound by his original ideas. He will make changes as the work progresses, whenever it is practicable and advantageous to do so. And, without a single exception, during the construction of the Price Tower, every such change that was made resulted in marked improvement.

Joe D. Price, son of the owner; who took the photographs:

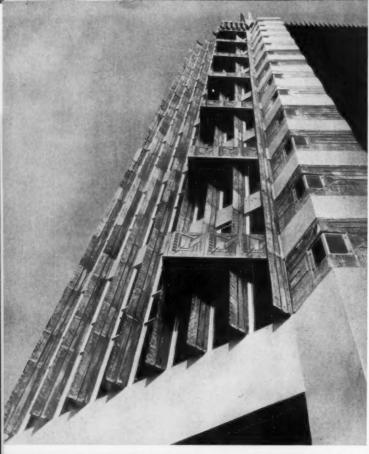
When only the bare structural form of the building had been erected, it possessed a basic poetry different from the rhythm of the ordinary post and beam and slab system — a beauty that was actually built in before the exterior was ever applied. The outer surfacing — when it was finally fixed in place — merely intensified the ingrained charm and grace of the basic form; a quality best described by Mr. Wright's own term "organic."

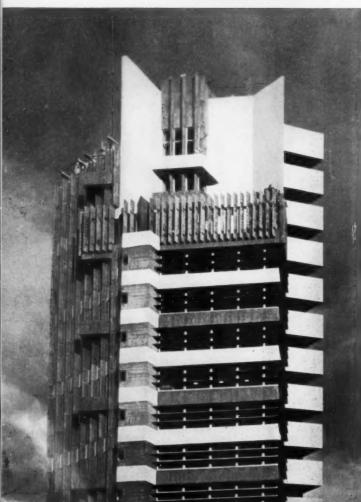


Ine D. Price

When the windows were added to the skeleton, their big mullions tended to make the building appear heavy. This discouraging stage of construction lasted several months. But one day, when the louvers had been applied to the upper third of the tower, I was walking along Bartlesville's main street and looked up over the little boxtype buildings all about me to find the Price building towering majestically over them. Then,

for the first time, the true building itself became visible to me. There are no words to describe the intense feeling it gave me. Since then the building has grown in magnitude. As you drive through Bartlesville, down streets, past houses, through alleys, you keep seeing glimpses of the tower rising and thrusting nobly above the rooftops. Everywhere one goes he is aware of it—as a medieval cathedral, it dominates the town.





EDGAR KAUFMANN, JR.

Historian, author, critic:

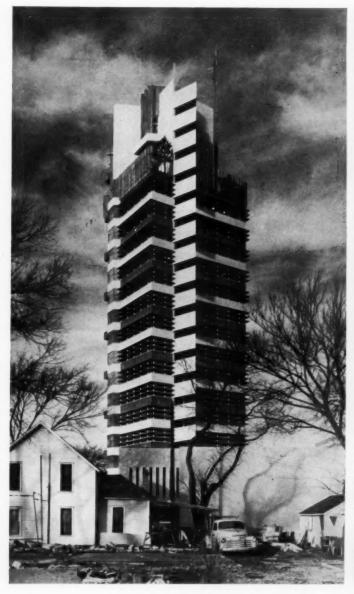
THE PRICE TOWER culminates an extraordinary tradition that began in 1873 when Frank Lloyd Wright was four years old. Then Frederick Baumann published a pamphlet, The Art of Preparing Foundations for all Kinds of Buildings with particular Illustrations of the "Method of Isolated Piers" as followed in Chicago. At eighteen Wright went to work for Adler and Sullivan in the Borden Block, one of the earliest tall buildings erected on isolated piers, and designed by the partners themselves in 1880. Similar piers supported Sullivan's later masterwork, the Wainwright Building. Wright wrote, "As he threw the 'stretch' on my desk with the first three bays outlined in pencil I sensed what had happened . . . Until Louis Sullivan showed the way, high buildings lacked unity. They were built up in layers . . . All except one . . . Root's Monadnock . . . a noble building."

In 1890, tall buildings achieved their first symbolic and purely exterior expressions of unity: the second Leiter building (structurally advanced); the Monadnock (structurally retrogressive); the brilliant Wainwright (structurally symbolic rather than directly expressive). Ever since, unity of surface has remained the admired expression of tall building design.

Beaumann's seed idea of the isolated pier was to yield a second harvest, however. In 1929 Wright, after his great skyscraper projects of 1912 and the early 1920's, grasped the isolated pier as the very core of tall building in his scheme for St. Mark's tower. Developing from a 60 foot wooden windmill he erected for his schoolteacher aunts thirty-five years earlier, this concrete and glass shaft achieved a technical and spatial expression of startling originality. Four separate, symmetrical segments were linked by ribbons of patterned copper; fire-stairs differentiated alternate sides of the building; pointed ribs of concrete, evidence of the mast-like structure, impinged on the sky to top it all.

Twenty years later, in the laboratory tower for S. C. Johnson and Son, Wright gave the isolated pier a yet more forcible expression. One great concrete shaft, sunk deep into the earth, rises to carry work-space cantilevered about it, smoothly sealed in bands of brick and glass; the surface the complete expression of the core.

When Harold Price requested a building combining offices and dwellings, Wright reworked and

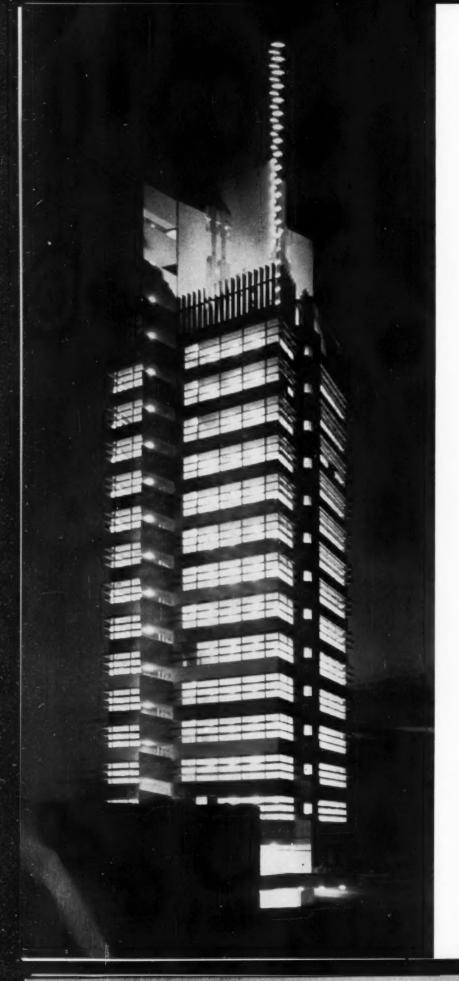




Joe D. Price

refined his original scheme of a tower in quadrants. The proportion of three to one in favor of office space produces an exterior asymmetry of continual, graceful surprises. Fire stairs and corewalls rise to a coronet of offices for the owner. Blue-green copper—inside and out—counters the different blue of the sky; golden glass softens the strong prairie daylight or warms the dusk. Copper fins further modify the light—vertical over the

apartment windows, horizontal elsewhere — ensuring in silhouette the vibrant dotted line Wright always prefers. The structural core of the Price Tower effloresces in movement, color, texture, ornament, and (in the penthouse mural) art, all held together and in scale by integration with the structure itself — inner unity and identity here embodied in an architecture that establishes as seldom before a new horizon.



Architect: Frank Lloyd Wright

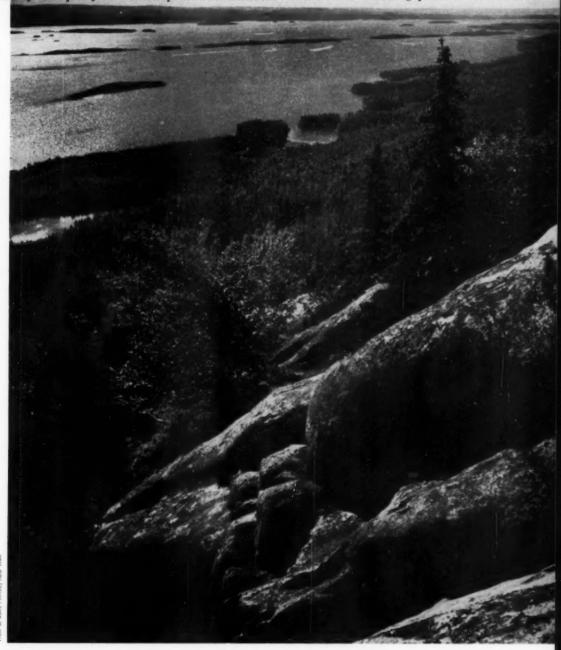
General Contractor: Haskell Culwell Construction Co.

Mechanical Engineer: Collins and Gould

Electrical Engineer: L. B. Perkins Co.

THE CONTEMPORARY ARCHITECTURE OF FINLAND

A selection of examples from the comprehensive exhibition - now on tour - covering postwar achievement



Arranged originally in 1953 by the Finnish Architects' Federation, and designed to show architectural achievement in that country during the past 15 years, an exhibition comprising some 30 odd panels showing 65 examples by 49 architects as well as a brief coverage of influencing historical works was shown for the first time in the United States at the reopening of the Octagon in November, 1955, and will tour the United States.

The traveling show was jointly organized by the Association of Finnish Architects and the Finnish-American Society; will be circulated by the Smithsonian Institution Traveling Exhibition Service. The Finnish Commissioner and Architect for the Exhibition is Iiro Tukkila; the sponsors are: The Finnish Ambassador to the United States, Mr. John A. Nykopp, and the United States Ambassador to Finland, Mr. Jack A. McFall.

Comments on the exhibit and discussion of the state of architectural development in Finland today — presented on the following pages — was written by Göran Schildt, Finnish historian and critic.



Eerikäinen & Sipari: Church at Salla (Lapponia)

FINNISH EXHIBITION



Rewell & Sipari: Primary School, Tuusula



Alvar Aalto: Tuberculosis Sanitorium, Paimio





FINLAND BUILDS

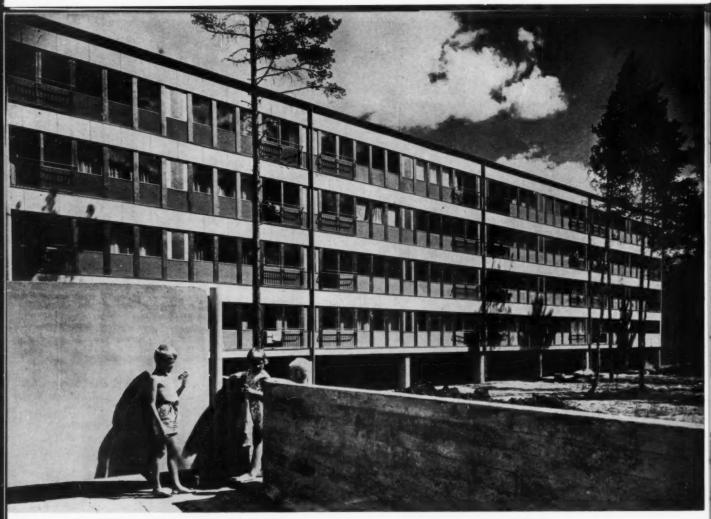
by Göran Schildt

THE DEVASTATION and human losses of war occasion many reactions in society. One of them is an exceptional rise in the birth-rate. Another is that out of the ashes rise buildings larger and more numerous than those destroyed. When, in the Atheneum of Helsinki, in 1953, the Finnish Architects' Federation arranged the most significant and extensive architectural exhibition ever held in that country, the writer of the catalog correctly stated, "After World War II, Finnish architects have been given commissions of hitherto unknown scope." It has become apparent to many who have visited Finland in the postwar years that these commissions have indeed been many. However, the extent of what has been accomplished could be understood only at this exhibit, despite the fact that it failed to show the quantitative aspect of the reconstruction work. By means of carefully selected material, it aimed to show the best and most representative architectural achievements in Finland during the past fifteen years.

After a four day study of the designs, models, and photographs and after intense discussions with the originators of the designs, the writer left winter-bitten Finland feeling an urgent need to bring some order to all his impressions. These remarks will serve as an unbrooded attempt in that direction.

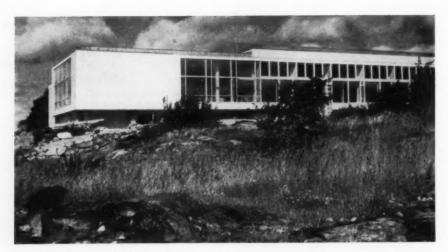
Perhaps the most impressive aspect of the exhibit was that it so clearly showed an art in the promising stage of expansion. It often happens that in viewing exhibitions of paintings or sculpture the spectator has the impression that both he and the artist are living twenty, fifty or five hundred years too late — that nothing but repetition and echo remain. Finnish architecture — with its wealth of fresh ideas, its spirit springing up from an inspiring competition between different temperaments and trends, its exaggeration and its fruitful mistakes — gives the impression of being in a vital, creative and triumphant stage of development. The spectator is possessed by the happy conviction that the best buildings ever built in Finland are being built now.

The exhibit included a small section as a memorial to Eliel Saarinen, the pioneer of modern Finnish architecture who died in his new homeland, the United States, five years ago. His designs, which combine the functionalism of the Jugend-style with an ineradicable love for the monumental element, pose a difficult question: is there unity in modern Finnish architecture—something that can be considered a national feature? The weight and earnestness of closed granite and a robust monumentalism, foreign to every attempt at elegance, was characteristic of Saarinen and his contemporaries Lindgren and Sonck. But they were not alone, and won many followers among the group of architects who created the Parliament Building under J. S. Sirén and who formed the so-called "Helsinki school."



Viljo Rewell: Aparlments at Tapiola, Helsinki

FINNISH EXHIBITION

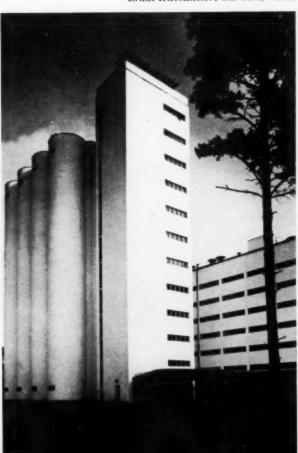


Aarne Ervi: University Library, Turku



liro Tukkila: Cancer Clinic, Helsinki





Schildt (continued):

As a contrast to this development, there appeared in Turku another group, led by Alvar Aalto and Erik Bryggman during the rationalism of the thirties, which followed a line freed from both weight and monumentalism. At that time, it appeared as if vital Finnish architecture had been seeking a way out of what had seemed its national characteristics. Now, twenty years later, it can be seen that this was not the case. Alvar Aalto, who was called upon to become the great foreground figure has, step by step, turned back from his early excursion into Le Corbusier's grounds, made in the building of Turun Sanomat, in Paimio Sanatorium and in the City Library of Viipuri. The leap is truly enormous from Saarinen's design for a parliament building in Tahtitorninmaki in Helsinki to Aalto's Town Hall in Säynätsalo. However (in the writer's eyes), Alvar Aalto is in his latest creations materializing the best aspects of the apirations that, in the past, have led to the erection of so many masculinely rugged, noble and emotionally-toned buildings. That this outlook of Aalto's has penetrated through solid rational schooling and that his characteristic feeling for moderation shrinks from all crushing monumentalism (the solution of the enormous People's Pension Institute in Helsinki to a system of smaller building units provides a good example of this) serve to indicate that his idea of monumentalism is akin to the ideas of composed and sober Greeks.

Against this background, one is also inclined to consider it a good sign that, instead of slavishly following their master, so many of the country's younger architects for their part go along the same road as he. In other words, they seek a contact with an architecture of glass and concrete structure, of floating lightness and logical calculation.

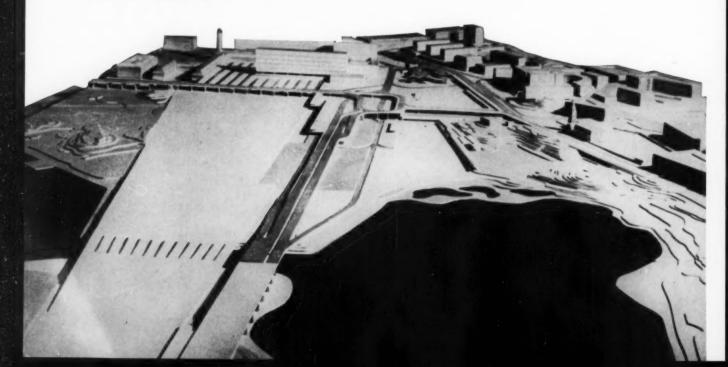
The outstanding name in this more rationalistic trend is Viljo Rewell. He has created, in addition to the Industrial Palace in Helsinki, a highly meritorious school in Meilahiti, as well as apartment houses that would be embellishments in today's rebuilt Milan. An interesting specimen of this trend is the new church at Salla in northern Finland, designed by architects Eerikäinen and Sipari. It is immaterial that it looks from a distance as if it were made of folded paper, for actually it is a rigorously constructive solution, based on a roof elevation related to those of the medieval gray-stone churches.

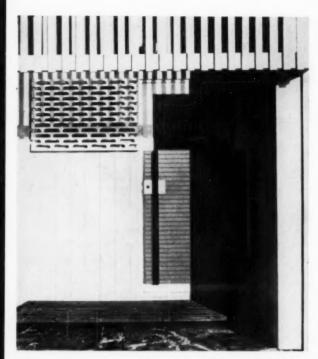
That Alvar Aalto should dominate the exhibit was to be expected, but it was nevertheless surprising to find his work foremost in virtually every section of the exhibit. Town planning, saunas, crematories, factories, hospitals, passenger ships, schools, churches, office buildings, apartment houses and tombs — each of these seems equally to inspire his tireless creativeness. For the writer (who had previously seen most of Aalto's



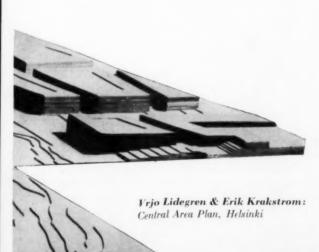
Olof Hansson: Villa Schildt, Östersundom

FINNISH EXHIBITION





Olof Hansson: Entrance, Villa Schildt



Schildt (continued):

works in reality) the design for the crematory and cemetery in Kongens Lyngby, outside Copenhagen offered the most positive surprise. The difficult problem posed by modern, effectively organized cremation has here been solved with distinction.

Although Aalto is the dominant figure, it should be noted that he has influenced his colleagues far less than might reasonably be expected. Finnish architecture is markedly republican in spirit, its tendencies are divergent, and the sources of inspiration are more often sought outside the country's frontiers than inside. Aalto's indirect influence is most certainly great, although uncontrollable; the existence of this grand and honest architecture must surely exert an inspiring influence on the entire surroundings. Two independent architects of the older generation are the late Yrjö Lindegren, creator of the Olympic Stadium in Helsinki, several other sports establishments and the so-called Snake House, a freely winding apartment house in Helsinki; and Erik Bryggman, most noted for his Cemetery Chapel in Turku, but perhaps greater where his weakness for decorative elements is less evident. Ragnar Ypyä recently built one of Denmark's largest hospitals in Glostrup, and a very well planned housing area in Västeräs. However, his design for an enormous, circular building for the new Kivelä Hospital, in which many of the treatment rooms are placed in the windowless inside of the circle, seems decidedly less successful. Among the younger architects, we have mentioned Rewell, a talented designer. Aarne Ervi takes a lively interest in building with prefabricated beams and other manufactured elements. The Institute Building of the University of Helsinki and the large power plants at Oulujoki have won him great admiration.

There are other names and projects that deserve mention; Jonas Cedercreutz' and Helge Railo's Central Hospital in Jyväskylä, an attractive and daring creation; Jorma Jarvi's Swimming Stadium for the 1952 Olympics; Markus Tavio's dignified, altogether modern and exceptionally pure-formed church in Meilahti, Helsinki; and Keijo Petäjä's unusually intelligent solutions for the problem of a sauna and villa built on steeply sloping ground. Heikki Siren, who has plenty of ideas, shows his most merited creation in the Concert Hall in Lahti. But a further listing of names and buildings serves no purpose; it is more fruitful to attempt a general summation of the exhibit.

As is well known, "humanizing" is the slogan of today's architecture. After the rationalistic solutions of form and the social theories of the thirties, there are prominent today different trends designed to infuse life and an irrational factor into the architectural surroundings of people, such as were missing in functionalism after the early enthusiasm waned. It was surprising to







Alvar Aalto: Civic Center, Säynälsalo

FINNISH EXHIBITION

Schildt (continued):

hear Professor Chernyshev, Vice President of the Soviet Academy of Architecture, who had visited the Exhibit. declare that the architects' program in present-day Russia is to create, as a reaction against the constructivism of the twenties, architecture that is primarily human. The fact that Moscow University seems to us to be a prototype of non-human architecture is another matter; the setting of goals is the interesting thing. Western architecture strives toward the same ideal in entirely different ways, although - for it - the functional and social benefits inherited from the thirties form a natural basis of departure. A solution - which, with some generalizing, one is tempted to call an Italian solution - implies that to the free esthetic shaping is connected the exaltation which can be accorded to the milieu by an effective plastic treatment of space and volume. A great deal has been written to prove that all good architecture is functional. However, to see something functional in a Greek temple or in a Gothic cathedral, the idea of "function" must be given so wide an interpretation that it is difficult to exclude from such a concept either the Town Hall in Stockholm or the Vittorio Emanuele Monument in Rome. It is apparent, finally, that it is the quality of the feeling created by a building which decides its significance, while the practical requirement of function is merely a primary condition of necessity.

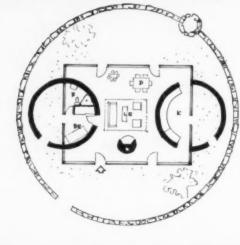
In Sweden, also, it has become clear that the saving of several housewives' steps and the lowering of the rent are not adequate goals for architecture. In this situation there is a temptation to resort to something which we are tempted to call the "people's home solution"; well known also in Switzerland, Holland — and with some short-sighted architects in Finland. It signifies "humanizing" by way of a polished petil bourgeoisie and a playful artistry in trivial art-making, which causes so many newly-built city sections to be pitifully dull and impersonally sterile. For the truth is that it is not sufficient, nor even necessary, to live practically and comfortably. It is necessary, however, to live in surroundings in which the human being, with his irrational soul. his capacity for ecstasy and sorrow, and his confinement to a community - can feel at home and contented. The old sections of European cities have generously offered all this, and architects have consequently long been able to occupy themselves with reconstructing and attaching neutral complements to such existing pieces. Perhaps this explains why Finland, so poor in examples of the older art of building, has felt more powerfully than other countries the need to change functionalism into a truly human art of building. It is far out in the Finnish wilderness, among the pines, that the world's perhaps most inspired modern monumental building has risen, Alvar Aalto's little Town Hall in Säynätsalo.



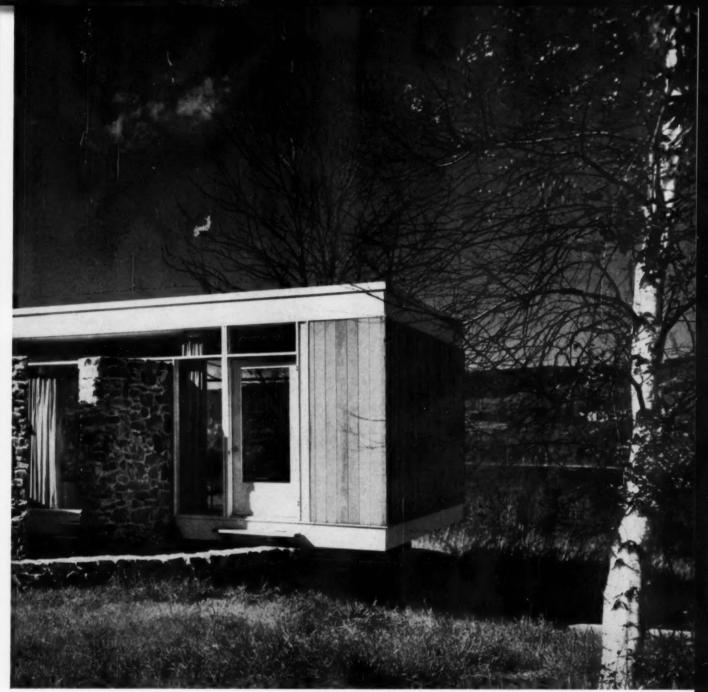
An architect and his client review the planning and design of a summer residence in Stockbridge, Mass.

John MacL. Johansen, Architect Dr. Alice McNiff, Owner





Scheme 1 abendoned Too balanced of formal The 2 circles compile



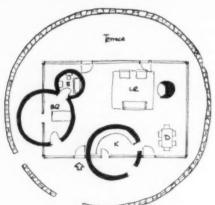
All photos © Ezra Stoller

The photos of this house do not require much study to prompt a series of questions: why the circular terrace, the circular stone chimney, the exterior-interior circular wall? Architect and owner were queried and revealed the following background.

The owner, Dr. Alice McNiff, an assistant professor at New York University, had an almost impossible list of site requirements: the site must be in the Berkshires, close enough to New York for weekend commuting and near Tanglewood, home of the Berkshire Festival; it must also be on a mountainside, facing west for the sunsets, and on or close to a lake. By great good chance she found exactly the property she wanted — 24 acres overlooking the lake and grounds of Tanglewood itself.

Next came the choice of an architect. Dr. McNiff had decided on a contemporary house (although she admits she was "rather afraid of it" for Stockbridge) and was

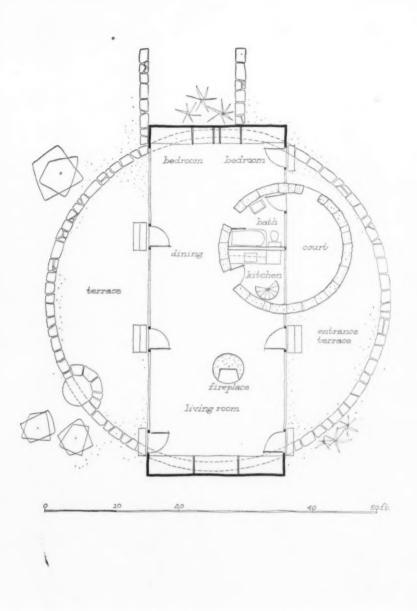




Scheme to abandoned

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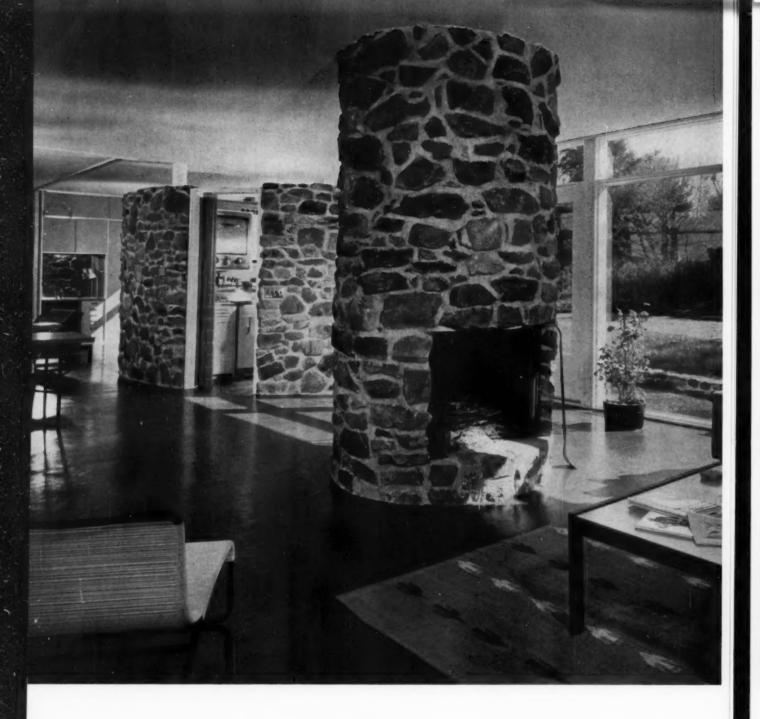


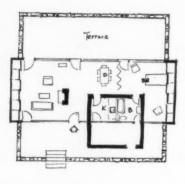
particularly interested in the "simplicity and serenity" she had found in houses in the vicinity of New Canaan, Conn. Again she was lucky: a single inquiry put her in touch with New Canaan architect John Johansen, who had summered in the Berkshires every year since he was three years old and who knew her mountainside well.

"All I told him," Dr. McNiff relates, "is that I wanted easy upkeep, a really tiny kitchen, a tiny bath-

room, as much stone and glass as possible, and as little wood as possible; room to sleep four people; no unnecessary walls; and a definite boundary for the lawn."

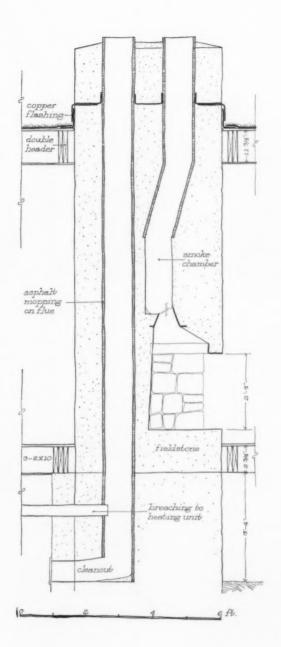
The architect, Mr. Johansen, says: "the general idea, was one of compartmentation of functional areas (inside and outside) from each other — static space for those enclosed, fluent space for those left between. The house is basically one large room, 50 ft long by 20 ft wide,





Scheme 43 abendonal works well but less pleasant in rectangles than circles





with a folding partition to close off the sleeping area. The long walls are floor to ceiling glass; solid end walls form 20-ft storage cabinets.

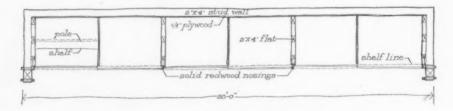
"The three stone circles with the rectangular building," the architect continues, "form the architectural composition. The largest of these is the low garden wall. This expresses dramatically the separation of rough, natural landscape from the cultivated terrace areas. The higher stone ring is half inside the house and

half outside; inside enclosing the bathroom and kitchen, outside a sun bathing court and shower. The third circular element of stone is the chimney. A circular stair leads from the kitchen down to laundry, storage, heater room and garage."

Four preliminary studies were made before Mr. Johansen showed his client even a rough pencil sketch. The first three of these already had been abandoned by the architect for various reasons (see his notes and



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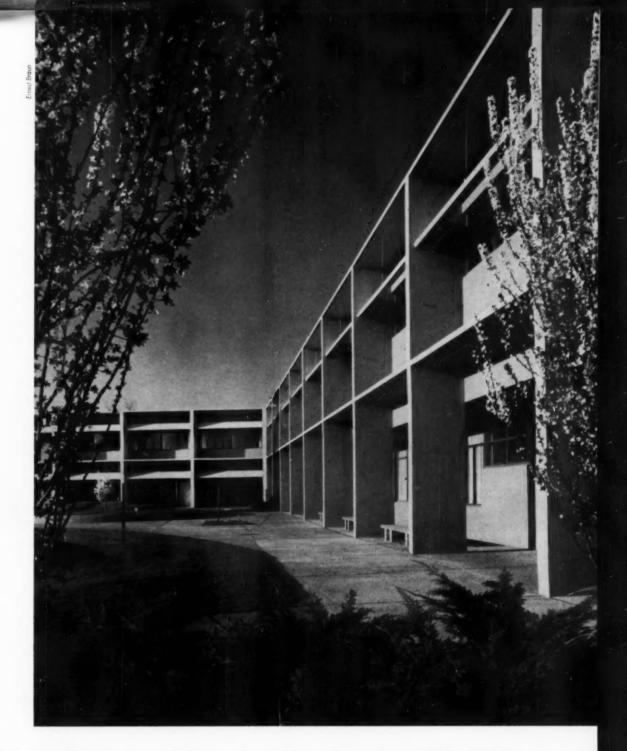


sketches, pages 170, 172 and 174). The fourth study, which was immediately adopted, "incorporated the strictly minimum, functional plan with the easy, informal use of the curved format." A ½-sin. scale model was built for study of proportion of space and mass.

The budget was a moderate one, and had to be adhered to rather closely. When preliminary bids came in some \$4000 too high, both owner and architect were so discouraged that they began to talk of a less expensive all-frame house. Fortunately, however, the architect was as enthusiastic as was the owner about the proposed

design; he re-studied the plan carefully, going over material and labor estimates with a new contractor, and, by coordinating the subcontracts himself, succeeded in bringing the construction cost down to the budget figure.

Construction problems centered on the unfamiliarity of local workmen with contemporary design: considerable schooling was required, with constant citing of successful similar construction in the New Canaan area, and one contractor even journeyed to New Canaan for first-hand verification. Construction proceeded smoothly, however, and to everyone's satisfaction.



A WORKSHOP FOR EXERCISES IN HOME ECONOMICS

Home Economics Building, University of California at Davis





Lobby's glass-panelled wall contrasts by day and by night with 20-ft bays of classroom, laboratory and office wings at either side. Fins are

actually part of building frame which with extended ceiling and floor slabs make effective sunlight control, essential in area's climate

HOME ECONOMICS BUILDING

Hervey Parke Clark, John F. Beuttler, Architects

Lawrence Halprin, Landscape Architect

Henry J. Brunnier, Structural Engineer

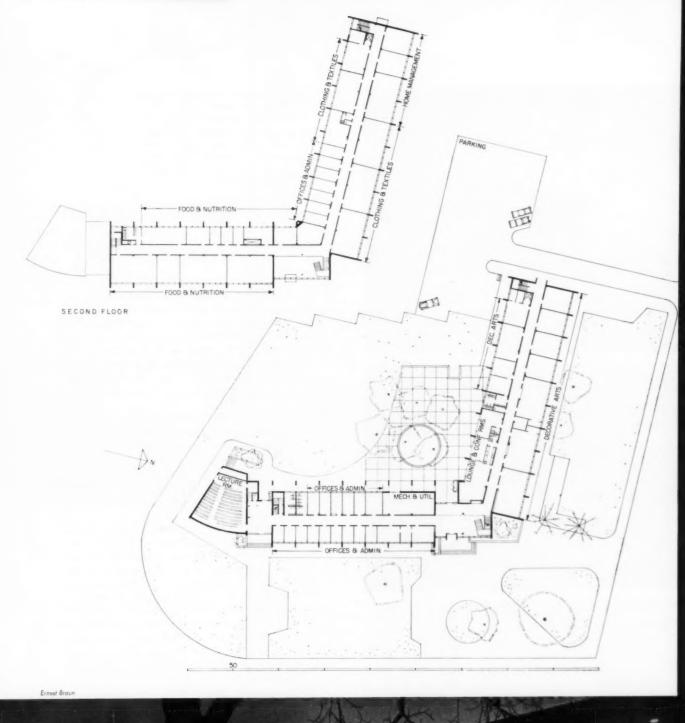
Keller and Gannon, Mechanical and Electrical Engineers

Erbentraut and Summers, General Contractors

Two factors especially governed the design of this Home Economics building for the agricultural campus of the University of California. One was to provide a building "whose friendly atmosphere would have the inviting quality of openness which an attractive home has" — no mean feat in a building of this size. The other was to dispose the elements of the building for the best possible natural light.

A further factor was the climate of the locality. Davis is in California's Central Valley, where hot weather starts early in the year, and temperatures by mid-summer go as high as 110 deg, and lasts until late fall. A comfortable building in such a climate has to be one which is cool for the greater part of the year.

Essentially a "workshop for exercises in home economics," as the architects characterize it, the building consists of classrooms, laboratory facilities, offices and one large lecture hall located where it is easily accessible from other buildings. Neither of the elements usually used to provide a "homelike" atmosphere in home











Landscaping is simple, consists largely of low-lying shrubs and flowering trees. Program called for lobby with as much residential character as possible, providing "gracious, informal atmosphere" in keeping with building's purpose. Laboratories like home management one (bottom) are important part of building's facilities

HOME ECONOMICS BUILDING

economics buildings is present in this one, since the nursery school (for child development courses) is in a separate building, and separate home management houses will be used instead of an apartment in the main building. The informal, casual character of the building, so important a part of the program, is obtained through the careful organization of the plan and consideration of such fundamental architectural qualities as repose, scale and proportion.

Some departments, particularly decorative arts, clothing and textiles, require detailed work in good light. These departments were located where they would receive north light. Offices and food and home management laboratories have east light. Those offices which are located on the west side are placed on the first floor under a 9-ft overhang which protects them from excessive heat and sunlight.

The building's exterior appearance results directly from the integration of the structural system with some of these climatic control devices. Reinforced concrete was an appropriate and economical solution to the structure and a 5-ft module proved a further means to economy since it made possible a framing system based on 20-ft bays. The structural columns in this system are shaped as long, narrow fins which extend 4 ft from the building face; these, and the floor and ceiling slabs, form the major part of the sunlight control system. Large exterior louvers on the south and west supplement this system.

"The building not only is cool," say the architects, "but looks it." In achieving this, color was an aid: fins and slabs are natural concrete color; walls above and below windows are gray-green stucco; horizontal louvers are yellow. Garden walls, seats and plant boxes are buff-colored concrete block.

Since sub-surface water conditions made large basement areas inadvisable, the mechanical equipment for the forced air heating and ventilating system is in the east wing of the building. Each room has its own temperature controls. A constant temperature room, used by all divisions, provides a fixed temperature at all times, under all conditions, for special experiments.

INDUSTRIAL BUILDINGS

Factories - Warehouses

MORE AND MORE INDUSTRIAL BUILDINGS are the outlook for this year. More factories, more warehouses, more service buildings, more of everything. Economists of the F. W. Dodge Corp. (Architectural Record, Nov. '55) estimate an increase of 12 per cent over the already high levels of 1955.

While such an increase must of course represent expansion of industrial production, it is important to realize that new buildings result from other factors. Industry's ever more intense effort to cut costs hurries the process of obsolescence. It is getting almost to the point where a new factory building, like a new automobile, is already obsolete on the day it is first used — the new model is already on the way.

Architects and engineers are of course heavily involved in this process, not only because they design the new buildings, but because they are part of the cost-cutting team. Building costs are justified by economies in production, distribution or handling; building costs are in a sense less important than the others. A factory building is merely one part of a production machine, its purpose and its useful life determined by manufacturing processes. If the artistic side of architecture is still important, and it is, the functional aspects of the building are its reason-for-being.

This Building Types Study takes for its theme one of the more important of industrial cost-cutting approaches; the scientific handling of materials in the whole process of manufacturing and distributing goods. Materials handling necessities intrude in every operation of manufacture, every step of distribution; they represent perhaps the major avenue toward cost cutting. One materials handling expert cites as more or less typical the case of an automobile window frame: it has five parts, goes through 37 manufacturing operations, is handled 208 times and has 198 temporary storages. In another instance a specialty part was worked on for a total of 10.5 hours but the manufacturing process required 220 hours. If it is this sort of analysis that lends attractiveness to the word "automation," it is also this kind of thinking that determines the need for and design of new buildings. In the new group of buildings for Johnson & Johnson (page 182) it was largely this type of thinking that changed the original concept from one large square building to four separate ones.

In recent years industry has discovered that the same thinking works the same way in the distribution and warehousing of manufactured goods, and we are seeing a new crop of "streamlined" warehouse buildings. Some say indeed that the handling and sale of finished goods is a newly discovered gold mine, since it costs almost as much to get the product to the consumer as to make it, and distribution has not had the same efficiency study as production. There is a whole science of warehousing, complete with warehousing consultants, and warehouse buildings are now following earlier trends of factory buildings — single story layouts, away from congested centers, with fancy mechanical systems, electronic paper work, even radio-controlled lift trucks. Planners are now working on the automatic or push-button warehouse.

Decentralization is an accompanying trend which seems to be intensifying. As factories go farther afield from metropolitan centers, so do warehouses. Truck transportation makes its contribution to the decentralization.

All in all, it means that more and more architects, in more and more places, will be learning more and more about factory and warehouse methods, and building more and more buildings.

- Emerson Goble

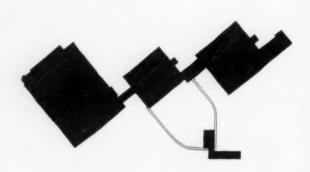
JOHNSON & JOHNSON TAKE A LARGER LOOK

New Manufacturing Center North Brunswick, New Jersey Walter Kidde Constructors, Inc., Designers and Builders When an industrial concern like Johnson & Johnson, famous in architectural circles for its enlightened concept of industrial buildings, changes its collective mind, that is news. And when the change produces so interesting a scheme as is now in construction, the news seems worthy of attention.

For many years the growing group of factory buildings of J & J has been the subject of many presentations in architectural magazines, with glowing reports of high standards of design, functional efficiency, consideration for the welfare of workers, autonomy of individual enterprises, beautiful landscaping, large sites in decentralized locations, and so on. Most of these concepts they still hold valid, and will continue in the new manufacturing center at North Brunswick, N. J. Nevertheless the new center represents new thinking; if it does not change the old it adds substantially to it.

What it amounts to is that their building program was beginning to grow beyond its previous bounds. Expansion needs were coming faster than could have been anticipated; some still sparkling new plants could not be sufficiently expanded. Their large sites were not large enough. Their older buildings — especially the ancient group at New Brunswick — were forcing expensive operations of a shoe-horn nature. There were growing strains in management, production and distribution. It was time to take a larger look.

One of the theories that suffered in this process was decentralization. A small plant, in its own location, with its own autonomy, its own group of workers, its own proud building — this was all very nice up to the





point where the seams burst. Then most of those advantages were lost in another move.

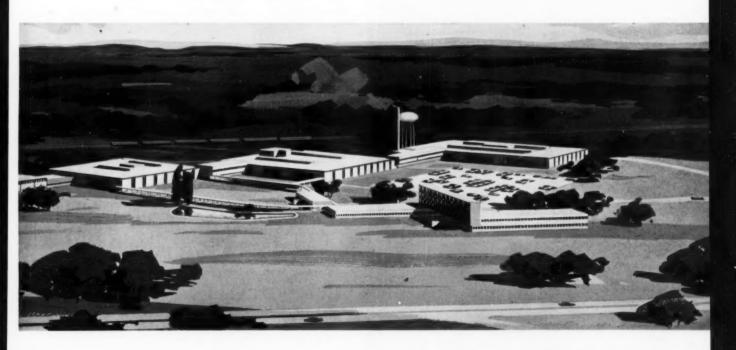
The new center will regroup certain of the manufacturing operations, and the shipping center, with a large enough site and a large enough concept to offer hope for some years of stability. It certainly does not represent the centralization of all J & J operations, far from it, but it may eventually become the home base, with new office buildings to replace the age-old home group at New Brunswick.

The rather radical grouping of buildings results from a similar rearrangement of thinking applied now to buildings. It did not arrive as a full-blown inspiration but grew laboriously out of months of effort to fit together many divergent processes and considerations. A few of the major changes in concept are shown in the diagrams on page 186, but it is reported that these are but a few out of dozens of tries. Those most active in this jigsaw puzzle process were: for J & J, C. V. Swank, Vice President, Manufacturing; L. J. Bardsley, Assistant to Vice President, Manufacturing; Nason Manley. Director of Construction Services; and for Walter Kidde, Frank L. Whitney, Vice President, and John Faas, Chief Mechanical Engineer. Whitney will be remembered as the project architect in charge of the Corn Products Refining plant at Corpus Christi, the one that is half-building-half-machine (ARCHITECTURAL RECORD, Nov., 1949).

Here again the solution came out of thinking of buildings as machines. The diagrams illustrate quite graphically the mental switch required in this instance. The group started, not unnaturally, with a plan of A BUILD-ING, a building to house what they wanted to put in it. The idea of a single building seemed to offer so many logical advantages and economies (one big square building was obviously the least expensive) that a long time was spent trying to realize those benefits. Gradually it became apparent that the advantages were more theoretical than real. There were always compromises involved in just staying within building walls.

Suppose we think of this, they then decided, not as a building but as a theoretical layout of processes on a limitless site without any walls. Now move toward an ideal scheme, working out all systems of handling materials and finished goods, all similar considerations, then see where you want the walls. Now start drawing walls, roads, spur lines, all the rest. Now what do you have? Then double all the operations; where would the walls go then?

Stripped thus of all practical problems and sketched out as a theoretical approach, it all seems much easier to comprehend, and the switch in thinking doesn't seem too radical. Industrial architects generally report, however, that complications usually are so many, so real, as frequently to block this basic kind of total planning. It is indeed the conventional idea that all sorts of manufacturing operations are stuffed into one building shell. All manner of process engineers will work out their mazes of machines, pipes, conveyors, wires, and almost always think in terms of putting them under one roof. And at some point the building is frozen by considerations that the architect may or may not be allowed to



Site for the Johnson & Johnson manufacturing center is 275-acre tract in North Brunswick Township, N. J., lying between the main line of the Pennsylvania and U.S. Roule 1. Initial program calls for three main buildings, two for manufacturing, one a shipping center, plus cafeteria and auditorium building. Another factory building may be added later. also possibly a new home office building. Present program totals 600,000 sq ft; largest single building, 285,000 sq ft. Construction has already begun; first occupancy is scheduled for Fall of 1956, completion of initial group during 1957.



tinker with. Industrial problems range, for architects or construction engineers, from those in which they are called upon to plan everything, including materials handling, to those in which they can plan nothing but the enclosing shell.

It is odd — still philosophizing — how difficult it is to assume much freedom of thinking about buildings for industrial purposes. Buildings are fixed, permanent fixtures, that take recognized shapes and styles and conform to fixed regulations. They acquire intangible qualities, maybe even an institutional sort of veneration. To a certain extent, of course, there are solid reasons why buildings are not junked like other parts of the assembly line. But it seems generally true that buildings are supposed to escape the rapid obsolescence that is so well accepted for machines. Certainly they will not escape obsolesence unless they are conceived with fullest possible freedom and imagination.

In the J & J instance the single-building scheme was given a thorough shakedown before it was abandoned. A more detailed story of factors involved is given with the diagrams, page 186. Oddly enough it was a materials handling development that broke the dam wide open. While testing various layout possibilities (in the single building) the planners were also studying routes for a dragline conveyor, a sort of all-purpose trolley line doing most of the intraplant railroading. When they began to think of separate buildings they realized that the dragline could just as well go any place as be confined with certain walls. It could go from one building to another, and back again, and the only extra expense would be in the length of the line. Time of handling was not a real factor: time would only be costly if factory personnel had to do the driving. If loaded trucks could ride the line unattended (and of course they always do) why bother about a little more time en route?

Now we are getting places. We can plan our in-process handling as we like, free from worries about bulk-distance calculations on either raw materials or finished goods. Now we can plan buildings as we really want them.

But one minute. What does this do to our building costs? Walls running all over the place!

The answer was easy enough — there was almost no difference. Outside walls were much longer, of course, but inside fire walls were virtually eliminated. And since there was little cost differential between inside fire walls and exterior walls, there was little to choose either way.

But one more minute. What about people? Are they all going to have to ride bicycles?

This question caused little more trouble. In the first place, it is not people but things that travel the longer distances. Most of the people stay at relatively fixed stations. In the second place, distances to cafeteria building proved to be little greater than from one end of a single building to the other. Perhaps more people will have to walk that distance, but they will probably

like this walk, since the separate building set in the park surroundings should offer a pleasant interlude, more pleasant than eating within the manufacturing plant walls.

Now the advantages of separate buildings began to roll out rapidly:

1. Expansibility comes first. With the buildings placed as they now are, each operation can expand in two directions as occasion demands. This expansion can be independent of other operations, forces nothing to move out of its path. Moreover, expansion will be in the easiest directions, forcing no disturbance to machines already operating (see diagrams).

 J & J favorite theory — autonomy of separate manufacturing divisions — is maintained automatically. This is a consideration for labor as well as for management.

 Closely allied to autonomy is scale of operation, and this too applies to workers as well as management.
 The separate building scheme cuts scale to humanly comprehensible proportions.

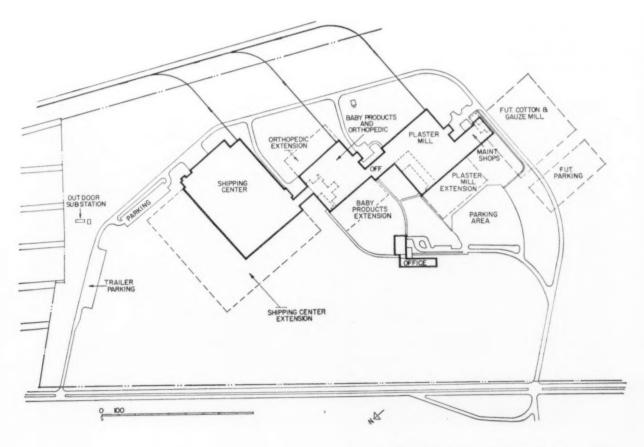
4. Strictly factory office areas and control laboratories are kept out of manufacturing buildings; they are in the connecting links between buildings, close to opera-

tions but out of the way of future layout changes.

5. There is greater flexibility for scheduling incoming shipments of materials. Theoretically, with three separate spur lines, one to each building, it will be possible to eliminate raw stores space. Whether or not this is ever practically possible, the three spurs help.

6. At one point it was considered disadvantageous to separate raw stores areas, as J & J wanted to consolidate controls. But some study indicated that physical separation was a small factor in control, and that this was more than offset by better handling of materials to processing machines.

7. Last but not least — several separate buildings give much more opportunity for architectural expression. Architectural attractiveness, always insisted upon by General Johnson, is difficult enough with a group of flat buildings of great size, but what would one do with a great square pancake? Now there can be some compositional effects, some relief in size and height, some logic and purpose in fenestration, some chance for color, some scope for Labatut's landscaping (yet to come). Some chance now for what J & J always want, an industrial development to arouse feelings of pride in management, workers, and in fact the whole community.



185

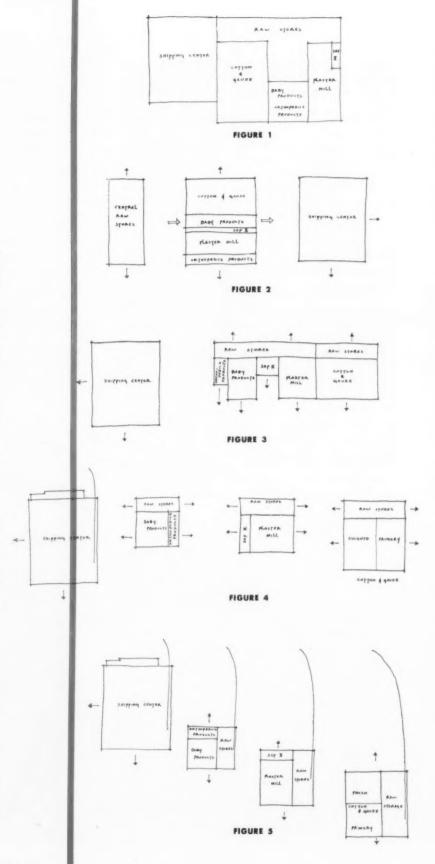
Figure 1 represents about the best that could be done with a single building, at about the time the Kidde men were called in. Expansion is obviously restricted; moreover any possible expansion would cause much moving, would be in wrong directions. J & J wanted incoming rail shipments to be so scheduled as to minimize storage and handling of raw stores, but a single spur line here would make that difficult.

Figure 2 shows an early try at separate buildings, with an attempt to centralize all raw stores. But handling of stores to manufacturing lines would be difficult. Expansion possibilities better but still by no means good.

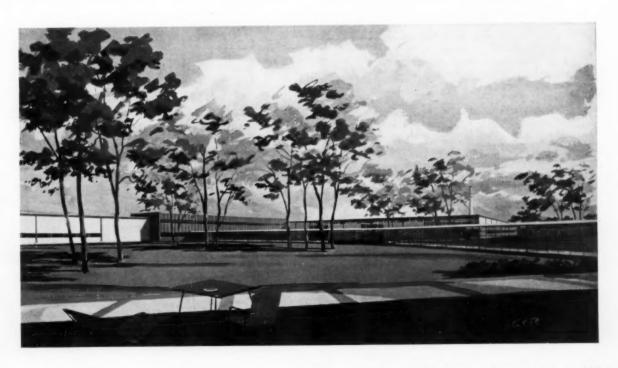
Figure 3 is an attempt to keep raw stores together but also adjacent to manufacturing operations. But growth of stores area would be away from machines. Good freedom to expand manufacturing lines, but stores and machines growing apart. Single rail siding still a problem. An advantage in that stores areas are together, hence are flexible.

Figure 4 is getting close. Stores and machines are close together, and stores areas can grow parallel with manufacturing. Separate rail sidings now possible, but directions make sidings awkward.

Figure 5 is mission accomplished. It is same as Fig. 4 except that building layouts are turned 90 degrees to get rail spurs in easiest directions, and buildings are staggered to take logical positions on route of dragline conveyor which connects them all together.







In this instance both client and architects agreed that fenestration should be rather intensively studied. J & J always wants daylight, not for lighting but for psychological effect. This desire even explains the monitors, though as a matter of fact the monitors proved very useful for enclosing a variety of vents and ducts that would otherwise clutter up the roof, and for fire-control vents. In any case, the architects took some pains over fenestration, as suggested by the elevations are the final ones, the half-tones the early studies of color effects.

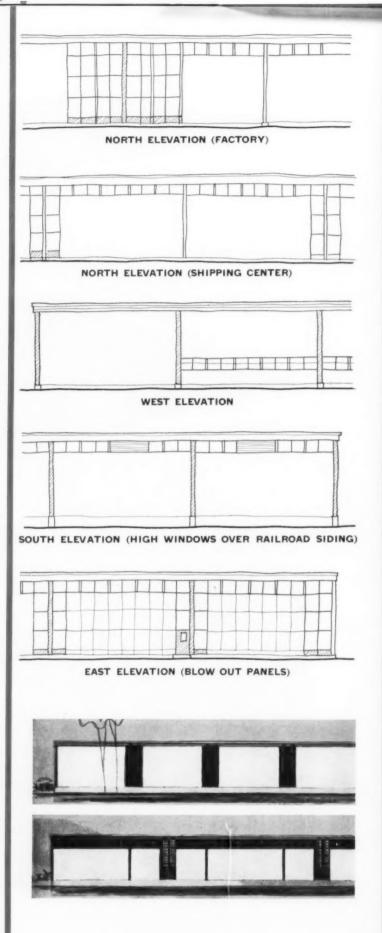
A blue glass will be used on all south, east and west exposures; clear glass on the north. West exposures use eye-level ribbon windows to obviate claustrophobia and to provide emergency ventilation. South walls will have ribbon sash below eaves for natural light and to allow maximum flexibility in locating louvers. East, ribbons under eaves and vertically alongside columns, enclosing blowout panels. North, ribbons under eaves plus occasional vertical strips for views and ventilation.

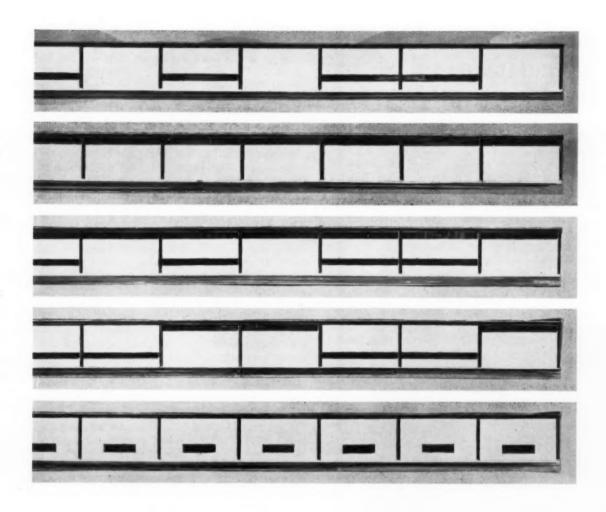
The buildings will be steel-frame, single-story structures, except for certain two-story office sections. Roof steel is of cantilever design. Walls generally will be of concrete block set between columns, with expansion joints at each column, making each bay essentially a panel. Walls will be generally white, with blue enamel cover plates over exposed steel girders and columns. Certain office portions will be of red glazed brick.

Column spacing is 41 by 41 ft, to accommodate ten rows of pallets. The clear height of the building is 18 ft minimum, with bottom of the steel set at 20 ft.

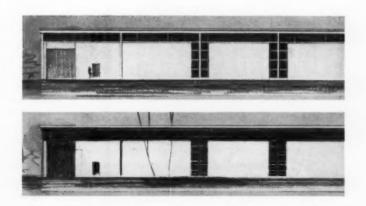
Each of the three major buildings contains its own administrative offices, lunchrooms, toilets, locker room and other personnel facilities, offices being mainly in connecting links between buildings. Manufacturing buildings will house employee facilities in basements, together with building services and processing equipment.

The center office and cafeteria group contains administrative offices, a central cafeteria and main conference or meeting room. Central medical facilities are also provided in this group.









MATERIALS HANDLING AND INDUSTRIAL ARCHITECTURE

By Irving E. Ingraham of Giffels & Vallet, Inc., L. Rossetti Engineers and Architects



Contemporary industrial architecture typifies the integration of architectural design with all phases of engineering. Modern industry has come to realize that buildings are as much a part of the productive and operative processes as are power distribution and plant layout. Professional services are now based on the thesis that there can be no clear division between the process and plant, and that architecture must be developed in close harmony with the plant layout and its equipment and services.

A natural result of this development has been that industrial projects — once considered primarily in the engineer's domain — have become equally the concern of the architect; and commercial, public and institutional works — once primarily the architect's province — have become the concern of the engineer. It has, of course, always been true that the structural engineer worked closely with the architect. But recent emphasis has been to have the equipment, plant layout, electrical, and mechanical engineers work closely together with the architect to produce an integrated, efficient plant or commercial establishment which is both esthetic and functional.

This modern integration of architecture and engineering is appropriately called Industrial Architecture, even though it is applied regularly to commercial and institutional projects as well as industrial. The name conveys the necessity for all modern structures to house materials handling devices and to provide for the proper flow of materials, vehicles and personnel.

For example, it was once considered sufficient for a public building, such as a post office, to have a monumental and pleasing appearance, which is to say its design was primarily an architectural function. Now it must also include the integration of all of the engineering fields, and be laid out to provide efficient materials handling. In skillful hands, such a building can be treated as a unified pattern and functional items which initially appear to be troublesome can be made to offer welcome relief and provide opportunities for accent and variation within a suitable over-all design.

The design of this post office parallels that of an industrial plant, and would commence with building layout to suit the site and provide for efficient receipt, flow and shipping of mail and materials. Analyses of conveyors, docks, lift trucks, palletizing, automatic cancelling, stacking and sorting, employee facilities, pedestrian flow, mail-by-auto facilities, and public services all enter into the layout and must be combined functionally within a suitable over-all design.

The industrial plant, conversely, was once considered solely a productive process which, unfortunately, had to have a functional housing of some sort. It was only recently that the layout and design of a factory became the province of any professional group, when production management turned to engineers for assistance in developing plant layout and design.

Industrial facilities produced under this emphasis

rapidly developed along the lines required by modern automation and mass production; that is, they were laid out to meet straight line flow and to provide for efficient materials handling.

As the modern architect-engineering firms began to serve both of these fields there evolved a conscious plan to achieve the integration of architecture and engineering necessary for an efficient, economical plant which was by nature, functional, simple and pleasing. It may well be that this coordination of the two professions has been ingrained in the personnel of these firms as a heritage of their association, rather than having come about as a conscious plan. The necessity to provide personnel flexibility to meet the rapidly changing workload in this cyclical business has made many of these individual engineers do some work as architects and many of the architects work on plant layout and various phases of engineering. This flexibility of training and knowledge on the part of these professional personnel has been a logical part of the process for the integration of architecture and engineering.

Industrial projects now usually commence with plant layout, at which stage the general outlines of the plant and departments and choices of equipment are established. Then architectural studies proceed apace with more detailed engineering, as the two are interdependent. The fundamental emphasis is on plant layout, which is the backbone of all good industrial facilities. In turn, plant layout is fundamentally an arrangement to meet the proper flow of materials.

The handling of materials represents most of the physical activity in a plant. Raw materials, materials in process and the finished product are the basis of its existence. From the receiving dock materials are unloaded, moved, stored, removed and stored, and moved into manufacturing. During the manufacturing process they move, wait in process and move through numerous operations and surge storages, through inspection and packaging to final storage. From there they go to the shipping dock and final handling.

This basic material flow in all industrial plants, whether processing or warehousing, is a major part of the activity. It absorbs many man hours, and may cover high costs hidden in inventory, space utilization and curtailed output. Materials handling is a top consideration of all management and so of the architectengineer.

Conveyors are often considered to be the basic materials handling device and, in the sense that materials handling encompasses machinery, they are. There are literally hundreds of different types of conveyors and other materials handling devices which are often the heart of a plant activity.

A single conveyor is often the basic item around which a plant is built. An example of this which quickly comes to mind is the assembly plant, where various components are added, one to the other, as the basic frame travels on a continuous conveyor. These com-

ponents may be sub-assembled adjacent to the main conveyor, or received as individual parts or complete sub-assemblies from another plant.

The continuous mold conveyor in the modern foundry and such other plants as those manufacturing foam rubber mattresses is an example of this type of conveyor. Here molds are filled, prepared and assembled either on or adjacent to the conveyor. On the conveyor they are poured, cooled, otherwise processed and emptied of their product.

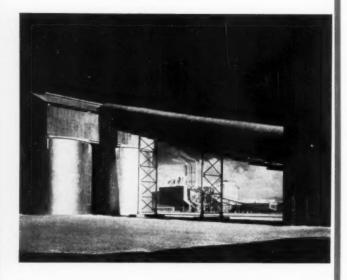
Probably more fundamental than the conventional mechanical conveyor to modern materials handling is the lowly and unsung fork lift truck, which has facilitated the modern concept of the unit load. This concept is that materials in any phase of production - raw storage, in process, or finished form - should be handled in as large a load of individual units as is possible. This is achieved by palletizing, tote boxing or otherwise packaging the material into a several thousand pound load that can be readily lifted, transported and stacked by lift truck. Of course these same unit loads are also conveyed on roller, belt and other conveyors or crane; but the transferring, storing and conveying medium normally is the lift truck. Utilization of trucks determines aisle patterns, storage area and ceiling heights (the latter to permit stacking), which enter into the configuration of the structure.

A logical extension of the unit load concept has been the complete elimination of units. In many industries, materials such as limestone, wheat and petroleum are conveyed through much or all of the production processes in bulk. Here the utilization of pneumatic conveying, belt conveying, hopper cars and cranes has not only eliminated many costs associated with packaging, but they have also had their effect upon architecture.

The architectural trend to facilitate this modern materials handling has been an almost universal and natural adoption of the single story building. This one level floor plant facilitates efficient arrangement of parts and assembly lines, and also provides for ease of materials handling by conveyors, cranes, monorails and lift trucks. The phrase "one level" in its broad sense, includes mezzanine, basement and penthouse areas which are frequently employed to conserve cubage and to keep auxiliary services adjacent to the areas they serve. The single story building normally, and for all intents and purposes, is equal in cost to the multi-story building for an equivalent floor area. The latter is usually not considered to be worth the sacrifice in materials handling required in vertical transportation between floors.

The multi-story building is still required in many production processes, especially in the chemical and allied fields where a vertical flow is a production necessity. The multi-story structure requires a minimum of ground area and is utilized for this reason oftentimes on expensive urban properties.

FACTORIES



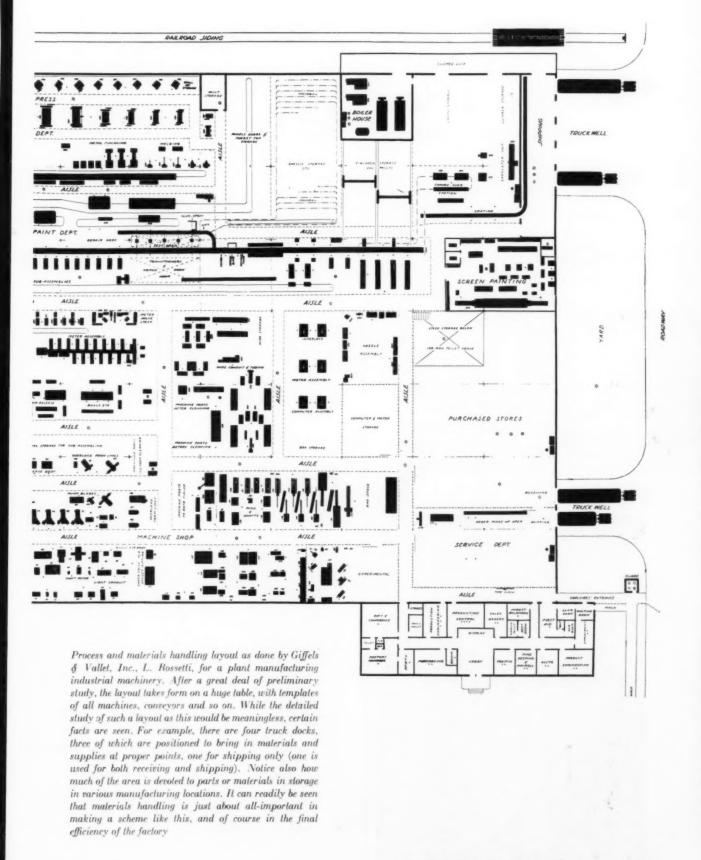




ens Art



TRUCK WELL



THE GROWING SCIENCE OF WAREHOUSE DESIGN

By William H. Meserole, President Ballinger-Meserole Company*

Food Distribution Center for Penn Fruit Co., Inc. Philadelphia, Pa.

The Ballinger Company, Architects and Engineers





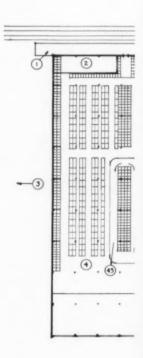
THE FIRST MODERN one-story "streamliner" food distribution depots were built in the early 1930's. They had 14 ft. ceilings. Their operators put cubage to use and handled tonnage on skids and high-lift platform trucks. What was then called the assembly line was in use, though still controversial.

Plenty was wrong with these warehouses, by today's standards. But considering they represented the first admirable steps toward high tonnage output per manhour, they were meaningful.

They were radical, too. They departed from the multistory concept that had dominated distribution warehouse history since days of yore when transportation was primitive, when distributors were obliged to locate near the market place and build level on level to justify real estate costs. Waterfronts were good locations because the upper floors of buildings could be loaded by ships' gear and unloaded by chutes. Hydraulic, then steam, finally electric elevators were introduced, and for generations it seemed as though invention to make these buildings ever optimum would keep abreast of need.

The first fork lift truck, circa 1916, developing slowly through the Twenties, found the chinks in the giants' armor and in the mid-Thirties tumbled them to the

- 1. Truck dock, cigarettes
- Cig. warehouse & stamping
- Expansion area
- 4. Premiums, shelf goods, etc. Fast-mover stacks
- Reception & shipping platform
- Truck dock Detail. End elev. of fast stacks
- 9. Storage stacks, turnover lots 10. Storage stacks, long buys
- balloon goods
- 11. Incinerator
- 12. Baler
- 13. Type & size of pallet
- 14. Pallet racks, med, fast movers
- End elev. of pallet racks Double rail spur, 32 cars 16.
- Rail rec. platform
- Truck rec. & ship. platform
- Truck dock
- Charger benches
- 21. Racks for very slow movers 22. Tow-line, set in floor
- Charger benches
- 24. Banana, tomato, melon rooms
- Toilets, lockers, overhead
- 26. Produce floor
- Warehouse offices
- Self-adjusting dock boards
- 29. Fish cooler
- Fish freezer
- 32. Maat rail
- Boxed meats
- 34. Meat & fish truck dock Cheese cooler & work
- Meat cooler
- 37. Wet produce cooler
- 38. Dry produce cooler
- Compressors
- 40. Office
- 41. Meat office
- 42. Employees entrance
- 43. Corridor to office
- 44. Start of order-pick 45. End of order-pick



^{*}The Ballinger-Meserole Company is a combination of an architectural firm and sourchouse consultant. In the past decade the firm has organized operations and space for some 300 warehouses.

ground. Wage rates had risen under NRA and the New Deal and goods no longer could be handled piece by piece in quantities per man-hour justifying the higher wage rate.

Elevators became serious bottlenecks; nine-foot ceilings then common forced operators to spread out the goods and increased distances traveled at more and more cents per man-hour. So, few if any multi-story distributor warehouses have been built since. The trend has been strongly toward "streamliners," with effort concentrated on improving operations within them.

This was all part of the drive to justify the rising wage rate. Labor cost as a percentage of sales has not declined since the Thirties, but the ratio has not increased either. Concurrently, the dollar wage rate has rocketed to three or four hundred per cent of what it was. Real wages have increased substantially since the value of goods has not risen that much.

Continual improvement of materials-handling devices — mechanical and procedural — arrested the percentages. We have machines today that run faster, lift more goods higher and require less waste space for aisles than ever before. The procedural improvements followed recognition of certain low-cost-causing principles that are so obvious they should have been detected long ago.

"Right" mechanics and structures, for distributors' purposes, have joined with the burgeoning population

to make this the century of scientific distribution at the middleman level.

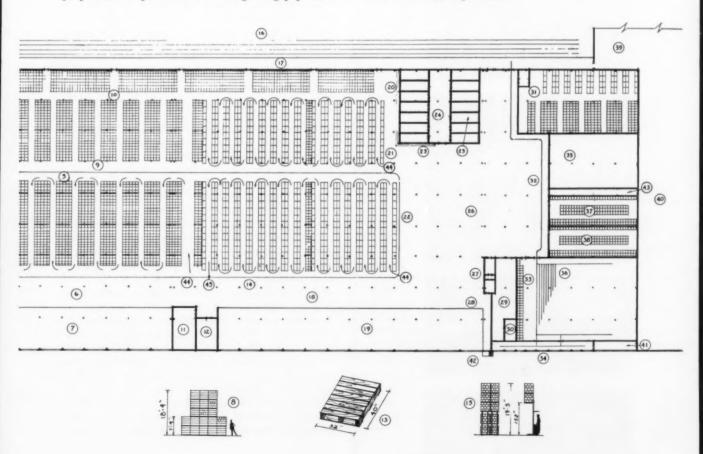
What is the architect's place in this picture?

Too often clients "guesstimate" they need a new plant a certain per cent larger than what they have. Too often the architect has no way of checking the estimate. So he accepts it, assuming the client knows how much space he needs, and away we go.

Common mistakes found in warehouses are:

- · too small or too large in footage
- · too low in ceiling height
- · badly column-spaced for usage (however economical)
- · wind bracing impeding usefulness
- · badly proportioned
- · ill-shaped, as in a "U" or "L"
- · improperly slab-heighted for trucks and rail cars
- · on inadequate land prohibiting expansion
- · too expensive
- badly floored as to surface, thickness, joints and just plain quality

Clients' estimates and architects' assumptions are often wrong. The architect should recognize the client as a merchant who, incidentally and unwillingly, must maintain a warehouse he views with distaste because its operations are far less flexible than his genius as a merchant. He is not a specialist in physical operations. He is impatient with his warehouse superintendent who is, or should be, a specialist.















Let's face it: not all are. Many, emerging from the labor force, learn all they know within the four walls of one warehouse and acquire reverence for its customs. They lack the perspective they could have, had they been exposed to other methods and mechanics in other plants.

Operations Planning

Intelligent distributors have recognized their own inability to design either their own physical operations or their own plants for lowest-cost operations. Many have sought help from a new species of specialist — the operations consultant — who has sprung up in response to demand.

Materials and dimensions, important though they are, depend heavily on several significant principles of inventory and work organization.

One can be stated simply: labor cost rises dollarwise with distance and tonnage. To apply this, up-to-date general-line food warehouses are organized on a ton mileage basis (as shown in the diagrams). The time-honored likeness grouping of goods — flour here, canned vegetables there, canned fruits somewhere else — no longer is maintained. The new concept of departmentization is built on such factors as fast and slow movers, shelf stocks, etc.

By these means the inventory is organized to minimize walking and hauling. Daily tonnage is moved in and out of the warehouse with fewest steps, turns of wheel and man-hours. The shape and proportions of the warehouse can enhance the results of these achievements.

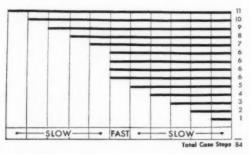
Proportion of Buildings

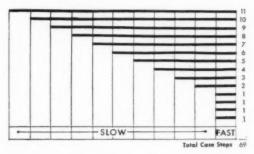
Architects know that square buildings are cheaper because the perimeter is shorter and less wall is needed for a given footage and cubage. But more important than any saving in building cost is the lower cost of labor when the warehouse is well proportioned.

Walks and hauls are greater as the ratio of length to width of the structure increases. For reasons of labor cost we believe it unwise for proportions to exceed three to one in a dry grocery distributive operation. As that ratio is exceeded it becomes harder to organize the warehouse for labor economy because the increase in length of walks and hauls is proportionate. Travel takes time. Time is bought by the man-hour.

Of course contiguous and related though separate functions can be set up in warehouses of any L-W ratio so long as no unified function occupies space exceeding the three to one proportion. A produce department may be set up at one end of a warehouse; a grocery operation at the other. Neither need occupy space ratioed over three to one, though total space may be five to one.

Odd shapes like the "U" and "L" should be avoided. These are hard to organize for economy and require more wall to enclose a given footage or cubage. Too narrow a site, selected because of excellent location, should be avoided — at least for grocery warehouse purposes. Plots less than 300 feet wide in the narrow





The Ton-Mileage Principle - How the strategic placement of one fast-mover item reduces the case-sleps

axis between a highway and a rail line may set up unexpected difficulties, like this:

truck dock	100 ft
covered truck dock	50 ft
inside shipping platform	25 ft
rail siding and platform	32 ft
	207 ft
left for stacks and aisles	93 ft
	300 ft

Under conditions like this, operations within a 40,000 sq ft warehouse (a small one) will be conducted in space ratioed at more than four to one. That ratio will increase, dragging rising labor cost with it, as any building expansion is made, since the warehouse can expand only laterally.

You can "correct" by making other mistakes, like minimizing the truck apron and eliminating the rail platform. Still the lateral expansion of the building is so limited by the three-to-one rule that the user will be driven out of his new warehouse by rising labor cost as his business grows.

How Much Land?

Another good generalization is that the future should be anticipated by securing enough land. The plot can well be big enough so not more than 25 per cent will be covered by the initial construction. The growth of food distributors is limited usually not by the market, but by their physical facilities. With labor cost lowered through a well-designed operation in a good new warehouse, growth and need for more space is likely to occur very soon. There must be a place for it.

Expansions should not be built until they are really needed. Gross margins being low in the food industry, few can pay 1960's occupancy cost out of 1955's dollar margins and still stay in the black. The question then is: how much warehouse does the client need right now?

We have conventions that work well for us in basic planning to determine warehouse size. The following illustration is based on use of the 40 by 32 in. pallet; 20 ft clear inside heights; standard dry grocery inventories; use of straddle-type high lifts, and reasonably-sizeable operations.

Here is the formula we use:

Dollar inventory divided by \$5 as the average case value yields number of cases in inventory.

Divide the number of cases by three, since three pieces per square foot can be stacked — yield is stack and aisle space required.

Add 20 to 25 per cent for non-inventory footage needed to get total footage required to carry the inventory at 70 per cent of "shoehorn" capacity, including non-inventory space.

From this, the building can be sketched, layouts made, and operating load computed. As a rule, minor addition or subtraction of space for more or less office, cooler or shelf department will portray accurately the client's space needs.

For a general-line dry grocery distributor, about 30,000 square feet is the low limit of size. For the operator who would use such a building the inventory load, which we've seen how to compute, is not the criterion of size. Rather, the criterion is spread of inventory — the variety offered for sale. The total number of cases, regardless of variety, is another matter. That governs the size of the building needed by large distributors.

It has been our experience in warehouses as small as 30,000 square feet that the inventory capacity is ample when there is aisle space enough to set up the spread. In such a warehouse 2500 items can be carried, and over \$4 million in annual volume accomplished. At 100,000 square feet, the problem is never spread — always load.

Building Design Factors

Because he stacks his merchandise on racks no dry grocery distributor today should build a warehouse with less than 20 feet of clear ceiling height.

For the architect this means adding enough to the 20 feet to accommodate all mechanicals and structure above that level, bracing included.

Speaking of wind bracing, there must be other and better ways of making sure a warehouse building will not twist or blow down. If the problem is explained, the client will usually settle for heavier structure. More steel tonnage may add a few per cent to the cost, but returns to usefulness a much larger per cent of the cube. Cross bracing at the bottom chord of a truss also makes it tough on the operator. If the ceiling height is 20 feet and the truss takes five, cross-bracing virtually guarantees an effective stacking height of only 15 feet. Thus the at-least-20-feet-under-whatever-lies-aloft rule.

In the dimension perpendicular to the shipping dock

the column spacing of a palletized warehouse should express a given number of pallet loads. With the 32 inch face pallet some multiple of three feet plus one final foot always works if the columns are not over eight inches:

9 pallets at 32 in. equals	288 in.
10 clearances at 4 in. equals	40 in.
1 column	8 in.
12)	336 in.
	28 ft — 0 in.

Add any multiple of three feet and the spacing may be 31 ft or 34 ft, etc.

In the second dimension, parallel with the dock, the depth of a rack or stack plus the width of the aisle is the multiple:

Rack, depth for two pallets	7	ft
Aisle required by lift and load	7	ft
Thus any multiple of 7 ft will do well		
How about 42 ft?		

And how about 28 by 42 ft? (Of course other dimensions apply with other pallet sizes.)

Floors and Floor Grades

Floors for food warehouses should be as good as skills can design and build. It never pays to try to save money on a concrete floor for a food warehouse. Where can the operation relocate while repairs are made? Besides, no one knows how to repair a concrete floor effectively.

Food warehouse operations, we have found, will not normally injure an honest six inch floor on good compaction — unless ruthless operators use steel-wheeled vehicles. However, we have seen four inch floors broken up by grocery loads. Steel wheels work havoc on floors. Rubber-tired and solid plastic wheels are available, and entirely satisfactory.

Expansion joints in grocery warehouse floors are another gremlin. The floor can and does chip away to some extent at these points. We prefer a sawed joint with the narrow slot filled with asphalt. Metal joints should be knife-edged, or they will break the wheels of jacks, wagons and other handling vehicles.

How high should the surface of the floor be above grade in the truck dock, and above the top of the rail at the siding?

Reason for confusion is that all heights of over-theroad vehicles bring in goods, and these vary as much as two feet between highest and lowest. It is impossible to adjust for all. Nor is there any way to predict the height that suits most.

One can tell exactly what the truck fleet of the warehouse requires, even though several kinds of trucks are used. The truck fleet can be measured and dock floor height adjusted accordingly. The dock slab height should be adjusted to truck height, loaded, so when empty the truck bed will be higher. It is wise to do this because in ramping down into a truck, the ramp has to extend well into the body. Ramping slightly up into any vehicle is preferable. The same thing applies at the rail siding. Rail cars are not wide. If one must ramp down into them, insufficient turning space is left inside for the jack or lift truck.

Another good reason for relatively-low rail platforms is that cars differ markedly in floor height and many have hinged doors opening outward. These are the refrigerator cars commonly used to protect goods from sub-freezing temperatures in long winter hauls. If the dock is high, doors may not swing open between car side and platform. For these reasons, we like a nine foot space between platform and center of rail siding, and a 3 ft 6 in. height of platform over the top of the rail. The gap between the car side and platform of some cars then is nearly four feet, but that can be bridged easily, and the dimensions stated outguess all difficulties.

Where double rail sidings are necessary to carry more cars alongside, the two rail centers should be kept far enough apart to allow the doors to two refrigerator cars to open, letting the off car be worked through the nearer one.

Things to Come

As the multi-story warehouse toppled at the summit of its development, so will our now-wonderful streamliners. The shape of things to come is already visible. Manufacturers of materials handling machinery are asking themselves what they'll be making, say 20 years from now, when the only lift trucks extant will be in museums. Some of them are doing something about it — which tends to bring closer the date of accomplishment.

In time 80 per cent complete automation in distribution warehouses will be the rule. Goods will be handled by machines activated by magnetized tape. Machines will detect odors, read numbers, appreciate dimensions, work in the dark in one-story warehouses of towering height, without floors. The buildings, indeed, will themselves be machines, and instead of labor forces we shall have a small corps of technicians to keep the plant operative.

The only "labor" will be a small receiving crew directing inbound goods to slots by mechanics and electronics. Allow 10 per cent for the technicians and 10 per cent for the input crew, explaining the 80 per cent figure above. When this happens we shall be able to pay the technicians three times as much as labor earns today, and the inputters twice as much, while operating at half the labor cost.

Certainly this is a dream. But so was the Brooklyn Bridge, designed before Roebling worked out the detail of spinning the big cables on the job.

We have been told by the "brain" manufacturers that if we can think out what we want, and can afford it, they can make it.

So it is only a matter of time. Twenty years? Thirty? And then, architects and engineers will house it all in buildings scarcely imaginable. Then, all we know now about warehouses for distributors can be filed away in a time capsule — to give our descendants a chuckle.

MODERN WAREHOUSE FOR FOOD DISTRIBUTION

Abner A. Wolf, Inc. Warehouse
Detroit, Michigan
Louis G. Redstone, Architect
C. L. Toonder & Associates, Mechanical Engineers





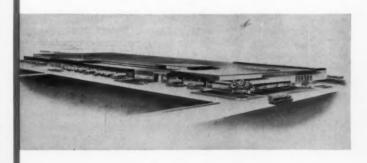
THE GREAT FLOOD OF PRODUCTS of industry must be sold, stored and moved to consumers, and the distribution process is rapidly becoming as scientific as manufacturing. The distribution inventiveness, and the buildings that go with it, is well illustrated in the food field, where both the volume and variety of goods force an intensive search for the most economical methods. Buildings for the handling of grocery products are called warehouses, for of course that's what they are, but the operations inside them may include all of the modern wholesaling functions.

The Wolf warehouse in Detroit is one of the large and well organized ones, a true wholesaler. But Manley Wolf, one of the brothers who have become in fact warehousing specialists as well as food sellers, laments that here their operation has so outgrown their building that some of their science has been snowed under. He nevertheless has outlined their methods, with special reference to their effect on building design.

"We operate with a 72 page order form. The customer orders the items in the amounts he desires and mails the form to us. Girls select tabulating cards for the items that he has ordered; these cards are then pre-sorted from their original order-form code sequence to warehouse lot sequence. They are then put into the IBM tabulating printer and an invoice is printed. This invoice has 3 copies; office, customer and warehouse. The warehouse copy is used by the selector to fill the order. The office and customer copy, kept together, are used to check the selected orders. The checker marks an X for items filled and an O for items not filled. This gives the customer a copy of the actual checking that took place.

"Our order selectors use 4-wheel trailers and electric towing tractors and select their orders on empty pallets, which, when full and checked, are loaded by fork trucks at the dock. This system of filling on pallets, though slightly less productive at the selection end, more than compensates at the loading end.

"We operate on a surplus selection system wherein order-pickers are travelling in a selection area which contains a representative amount of all items. The selection area, of course, is backed by the surplus area which contains the remaining stock. We feel that the additional intra-plant handling necessitated by this is more than compensated for by the shorter selection



walk of the order-pickers and therefore their greater production. We operate under a quasi-slot system, the slot number for each item being in effect the selection address number of the item. All items have a code number in our order form from which the customer orders and these are numerically in sequence by family groups. All tomato products are found in the same area of the order form and are in numeric sequence. These same tomato products are in different warehouse locations selection-wise. Thus, with the slot number system, we can keep our selectors in numeric sequence without confusing the customer order book which approximates store layout. Also, the separate slot number allows greater facility for moving items in the selection line. For instance, an item that is normally a slow mover and therefore in a less accessible selection area, might become a feature item at store level with a much accelerated movement. Thus, by merely changing the slot number, without any alteration at the customer level of ordering, we can put the item in question in its proper spot.

"We use 28-foot through 32-foot semi trailers almost exclusively in our delivery operation and average 80 loads per eight-hour day.

"In our receiving operation, we can receive 20 highway trucks at a time and can accommodate 14 railroad cars within our building.

"You probably know most of the architectural facts concerning our building, but in the event that you don't, here are a few pertinent ones. We have 40 x 40 bays. We have a clear useable height to the bottom of the trusses of 16' which we find adequate for our 40" x 30" pallets. Our shipping docks are 240' long and 51" high. Our receiving dock is 200' long by 30' wide by 48' high. The reason for the lower receiving dock height is to be able to accommodate more inbound trucks of varying truckbed levels. Since it is an unloading operation, we're better off coming out of the truck with a down slope than the reverse.

"In closing, I might mention some things of prime importance that we have learned in this building. Floors should be of adequate strength and proper finish. Adequate clear height is essential, pre-determined by the stocking height one's operation dictates. Above all, there should be an adequate electrical supply to handle greatly increased projected use in future handlings."

Constructed of steel, concrete and masonry, the building occupies 350,000 sq ft of a 12-acre site, with 38,000 sq ft devoted to office use, and 100,000 for expansion now going forward.

Foundation, reinforced concrete; frame, steel; enclosing walls, 6-in. concrete curtain with steel windows and steel deck facia up to roof. Interior walls, concrete block. Roof, tar and gravel, 34 in. glass insulation over metal deck. Warehouse floor, 6-in. reinforced concrete with a hard "monorock" finish.

Average cost of building was \$6.50 per sq ft, including warehouse, offices, cooler installation and refrigeration equipment.





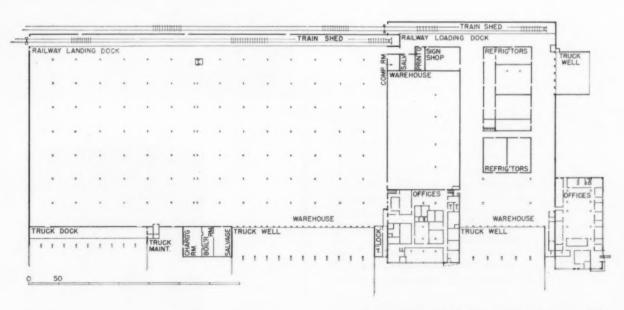










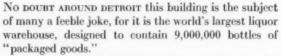


OFFICES AND WAREHOUSE FOR MICHIGAN STATE LIQUOR COMMISSION

Louis G. Redstone and Otis Winn Associate Architects

David J. Zabner, Mechanical Engineer

Building Division, Michigan
Department of Administration
Adrian N. Languis, Director



Like most modern warehouses, however, it was designed for the business-like and economical handling of goods, in this case both local and state liquor storage and distribution at the wholesale level. Its dual purpose accounts for the fact that it is really two separate warehouses, with two separate truck wells.

Like many another of the representative "warehouse" buildings in other distribution fields, it is also a sort of home-office-in-the-field, with fairly important



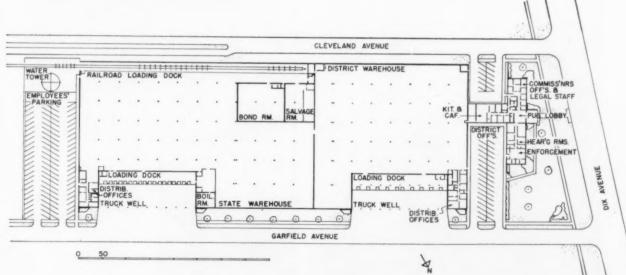






Lens-Art





ARCHITECTURAL RECORD FEBRUARY 1956

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stature as an office building. Here are housed the state liquor control commissioners, legal staff, office staff, enforcement group, district staff, complete with kitchen and cafeteria, all completely air conditioned.

The warehouse portions contain 240,000 sq ft, disposed in a rectangle 800 ft long by 300 ft wide. A railroad spur extends into the building to bring as many as 10 freight cars to the incoming platforms. Outgoing deliveries are by truck, and the two truck wells can accommodate 40 trucks. Manually operated levellers facilitate loading.

Warehouses used fire-resistive construction, with steel beams and columns, steel joists, metal roof deck. Exterior walls are 8-in concrete, 12 ft high, with upper section of corrugated asbestos. The warehouse fire protection system comprises automatic sprinklers, fed from a free-standing 100,000 gallon water tank and 100-gallon-per-minute fire pump.

Lighting in the warehouses uses the new 480-277-volt, 4-wire, 3-phase system. Heating is by unit heaters served by 10-lb steam, with vacuum returns. Ventilation system employs controlled sectional intakes and exhaust to obtain full coverage without dead spots.

Cost of the building, both office and warehouse, was \$5.76 a sq ft, including all site improvements. This cost is reported to be 20 per cent under the appropriated amount.





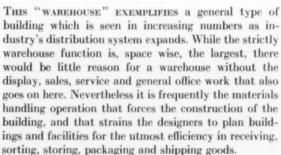






DISTRIBUTION CENTER FOR ELECTRICAL GOODS

Sales and Warehouse Building for Central Electric Supply Company Denver, Colorado Stanley E. and Jared B. Morse, Architects



Here these problems were turned over to the architect, to devise systems of handling the seemingly infinite variety of electrical supplies, ranging from tiny parts to great reels of cable. One can guess that he found it a fertile field for the kind of ingenuity that finds daily exercise in an architect's office.

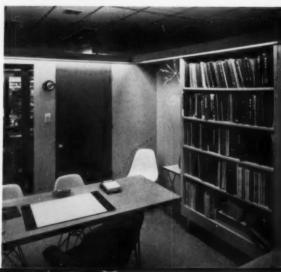
The building serves three types of customers. The display area (left portion of plan) is to promote the sale of light fixtures on a retail basis. Fixtures are mounted on panels and are inserted into the ceiling grid to simplify changing them. Small orders are filled in a serve-yourself area (left center of plan). Large orders are collected from the mezzanine area, assembled at the carton slide, wrapped, weighed and shipped.

Office partitions are removable in four-foot sections. They are designed so that uniform light and air conditioning can be employed for one large area. The cornice of the partitions is recessed to house electrical conduit. The architect reports that these partitions have proved very easy to maintain and are extremely economical. As the photographs indicate, acoustical treatment is liberally used.

It seems to be standard practice in buildings of this type to plan considerable expansion in the original scheme, then to start that expansion soon after the building opens. Here the first phase has begun with the addition of a mezzanine over bays 8 to 10 (from the left). Eventually conduit will go to a new building.





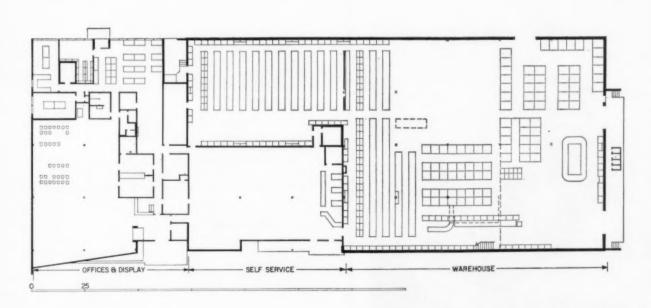






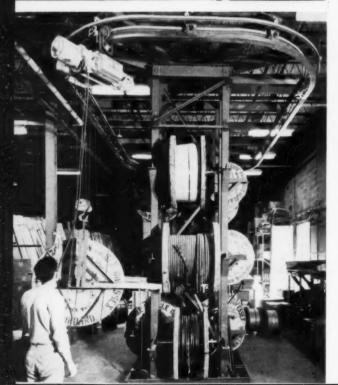












WAREHOUSES



Shelving indicated on the plan is all of steel; conduit racks were designed for steel but were adapted to Unistrut construction. The special rack for cable reels was employed to conserve floor space. The carton chute was devised to simplify the work of packing a great variety of items.

Due to foundation problems, the building is supported on caissons. Main floor is reinforced concrete. Frame is steel; all walls are concrete block, glass and asbestos-cement panels. Roof deck is flat, poured gypsum.

The building was planned for expansion to the north, west and south. A mezzanine is now being added in one part of the warehouse; it is planned to more the conduit part of the operation eventually to a separate building.

PREFABS OR PROPRIETARY PLANS FOR SCHOOLS?

Many American architects and educators are sincerely interested in the possibilities mass production and distribution open up; the demonstrated American enthusiasm for good new building products forces us so to believe. Yet some current examples of prefabricated schools in this country raise serious architectural questions as to quality, suitability and maintenance; while some educators. and laymen not so conversant with either sound design and construction or the imperative nature of local site and educational requirements, seem more willing to accept "prefabs" as a panacea. Furthermore, and naturally when there is deep public concern over rising costs, developing educational concepts and staggering pupil loads, eagerness to find an inexpensive, speedy way out leads to confused ideas. The confusion is not dissipated when patented plans, proprietary schemes and packaged building units are all labelled "prefabrication," particularly when some of the systems which are entitled to the label involve little more standardization of parts than is available on the American market for custom-built schools.

On the other hand, Britain has produced several prefabrication systems comprised of components adaptable to varying site conditions and educational needs, systems which place few limitations on design and produce permanent buildings of high quality. While their governing conditions are different than ours - in matters political and economic, the availability of materials and labor, for instance — the fact remains that British prefabrication systems work and work quite well.

The following material offers a chance to make comparisons not so much of results (though these are important!) as of principles. First is a description of British practice by an English authority who has in the past spent many months in the U.S. appraising our school buildings, who lectured before New England architects and educators last November at Cambridge, Mass., and who has been intimately concerned with the development of British prefabrication systems. Second is a report on three American systems prepared by the staff of Architectural Record.

- Frank G. Lopez, A.I.A.



Prefabrication in England: Hackenthorpe Primary School, Derbyshire, uses the Derwent (wood) system (photo: British Ministry of Education, courtesy Vic Hallam, designers of the system)

1: PREFABRICATED SCHOOLS IN BRITAIN

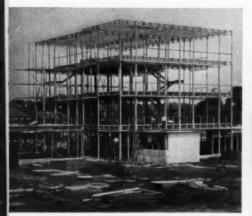
by Anthony Part, Under Secretary, British Ministry of Education

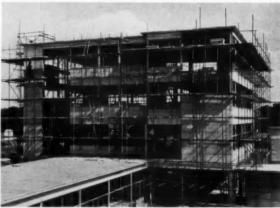
ABOUT ONE-FIFTH of the new school buildings now under construction in England and Wales are largely or entirely prefabricated. They are not substandard or temporary buildings, they are not limited to a single storey and they do not involve standard classrooms,

still less standard plans for whole schools. Above all, the systems from which they are constructed have not been designed to dispense with the services of architects. Indeed, if there is any merit in prefabricated British schools today, it is largely because a

major part has been played in the design both of them and of the components of which they are constructed by some of the most talented architects in the country.

During World War II it became clear that the post-war building industry







ST. CRISPIN'S SECONDARY SCHOOL (for 600 boys and girls), Wokingham, designed for the Berkshire County Council by the Development Group, British Ministry of Education, is a prototype for multi-story use of the Hills system (light steel frame, precast concrete cladding) used in earlier single story schools. 4-story block (left, July 1, 1952; center, Sept. 2, 1952) has 3 upper floors of classrooms grouped around a workroom. Air view and plan: social areas (one story but of varying heights) at right, entrance and library (classroom block over) at center, craft and science rooms (and a 2-story classroom unit) at left. About ½ of the 29 acre sile is shown

PREFABS IN BRITAIN (Cont'd.)

would be unable to handle the immense volume of construction required unless, in some areas at least, prefabrication were used. One house in every four and one school in every five was destroyed or damaged and large new populations would have to be provided for. Britain needed, among many other things, new steel plants and electricity generating stations and planned to establish for the first time oil refineries. In these circumstances prefabrication could help by saving man-hours on the drawing board (in factories as well as architects' offices) and on the site.

There was much argument at first about methods. Prefabrication means different things to different people. Discussions raged furiously about modules: should they be one-way or two-way? Should they be large or small? Those who opposed prefabrication of any kind claimed not to know what all the fuss was about. Most building components nowadays, they said, are prefabricated, even (they added correctly but mischievously) bricks. In the end, however, several important things became clear.

First, prefabrication for schools should be conceived as the mass production in factories neither of whole schools in a sense comparable with totally prefabricated houses, nor of individual units of a school, such as classrooms, gymnasia and kitchens but of ranges of components which could be assembled in a great variety of ways. What was needed was a series of meccano sets. In other words, each system should be flexible enough to allow architects to approach the design of each school as an individual problem with its own educational requirements and site conditions.

Second, any system evolved must permit economical lay-out and be flexible to deal with variations in site level.

Third, though most of the prefabricated components would be used in the shell of the superstructure, designers would have to bear in mind such other needs as heating, lighting and plumbing.

Fourth, it seemed unlikely that prefabricated systems could be marketed much, if at all, below the price of traditional construction. They must therefore have a length of life and a quality comparable with more conventional structures. For these reasons substandard or temporary buildings would be unacceptable. To produce good prefabricated buildings with a long life did not seem impossible. Quality and permanence depend on specifications and skill in design rather than on technique of production and erection.

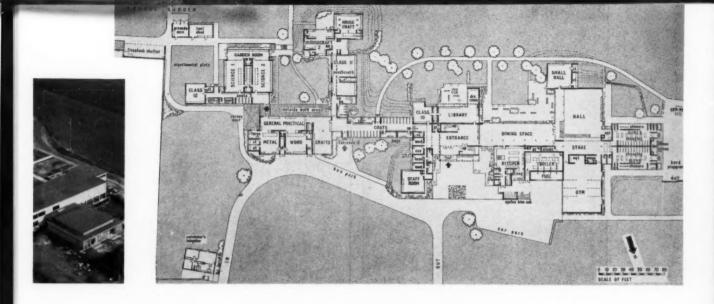
Fifth, because most of the schools first needed would be primary, single-storey buildings would probably be sufficient. But parts at least of secondary schools would need to be multi-storey, so as time went by, more elaborate systems would be required and the problems of vertical modules would have to be studied more closely.

Sixth, crude plan shapes, like those of Army camps, would not meet the varied demands of modern educators. (More is said about this later in this article). In order to give the architect freedom to meet these demands, there would have to be a two-way horizontal module with a related vertical module.

What size should the modules be? No one pretends yet to have produced the ultimate answer to this question. But modules of some kind seem to be essential if the range of factory-made components is to be kept within reasonable bounds and if the architect is to have a set of components which does not constantly impede flexibility of design.

An early suggestion of 8'-3" for a horizontal module (related to the length of a classroom) was discarded in favour of a more human scale which would also allow of more flexible and economical planning. The module now most generally used is 3'-4", but the economic width of aluminum and timber panels has caused several designers in these two materials to use modules of 4' and about 6' respectively.

Vertical modules are usually either 10" or 2'. One important feature of all the best prefabricated systems for British schools is that in order to keep down the number of components there is a constant depth between the ceiling of one storey and the floor of the storey





Above, Assembly Hall; raised aisle at right also used for drama and music

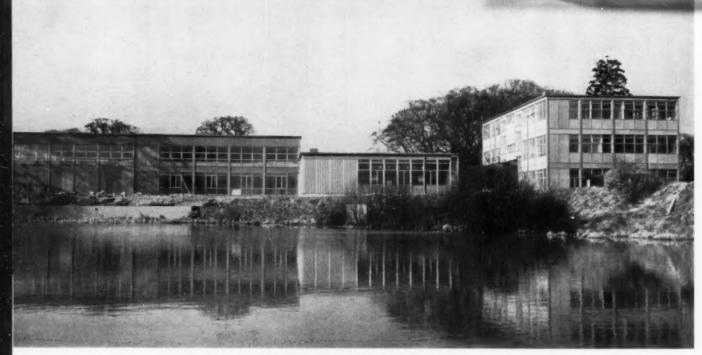


Above, Dining Room from Assembly Hall. Stage curtain: Enid Everard, Gerald Holton



Above, Dining Room; right, stair to class-rooms. Wall, ceiling decor: Oliver Cox





WHITLEY ABBEY (COMPREHENSIVE) SECONDARY SCHOOL at Coventry employs the aluminum system developed by the Bristol Aeroplane Company: steel frame and aluminum cladding. Elejance, neatness, fine finish characterize school buildings using this system

PREFABS IN BRITAIN (Cont'd.)

above. A second is that beams, whether made of steel, aluminum, concrete or — in some cases — timber, are of open web type so as to allow heating pipes and other services to be run free of the structure.

The most prominent early developments were undertaken immediately after the war by the Hertfordshire County Council. Faced with the need for about twenty new schools a year they worked closely with Hills (West Bromwich), a firm of engineers, on the design of a system which has since become widely known abroad.

Many architects, especially perhaps those of the older generation, looked upon prefabrication as a necessary evil. The young Hertfordshire team, assembled under the experienced guidance of the County Architect, Mr. C. H. Aslin (who now holds office as the President of the R.I.B.A.) took a more positive view. They believed that prefabrication would enable them to match the demands of educators more successfully than would traditional methods and to create efficient yet attractive buildings in a modern idiom. The architects worked very closely with the manufacturers, often spending long periods in the factory in order to make themselves familiar with its economics and the capabilities of the plant.

Since then other authorities and manufacturers have entered the market, and for the last five years much of the running has been made by the Development Group which was set up at the Ministry of Education in 1949. This is a team of architects, quantity surveyors, educators and administrators whose main task has been to design systems of prefabrication suitable for secondary schools, to try out the architectural implications of advanced educational practice and to fit the whole into an administration pattern which is valid for school building on a large scale. In all these operations, teamwork has proved essential. If any member had been left out of the team, these projects could hardly have been brought to a successful conclusion.

The control of cost has been a vital factor throughout. Every new school in England and Wales has to be built up to a standard and down to a price. (The standards are described in terms of results to be achieved, not of detailed methods to be used. For example, the amount of daylight required in a classroom, not the height of a classroom ceiling.) The maximum permitted price is described in terms of cost per child, based on a formula carefully designed to

put all projects on a reasonably comparable basis. No special extra costs are allowed either for prefabricated schools in general or prototypes in particular.

It follows that neither the Ministry of Education nor local education authorities (school boards) let any development contracts such as are common, for example, in the aircraft industry. The cost of developing new systems is therefore borne by the manufacturers. The manufacturers are prepared to do this for three reasons.

First, because the Ministry of Education has been able to convince them that with the certainty of a very large school building program to house the post-war "bulge" of children, they would have an excellent chance of marketing their products successfully, at least in the many important areas in which building labour is scarce.

Second, because the system of annual building programs established by the Ministry in 1947 gives notice about two years ahead to local education authorities of the schools which they will be permitted to build, thus enabling large authorities to place substantial orders well in advance of the dates when the components will be needed on the site.

Third, because of the development of the method of cost planning described in Ministry of Education Building Bulletin



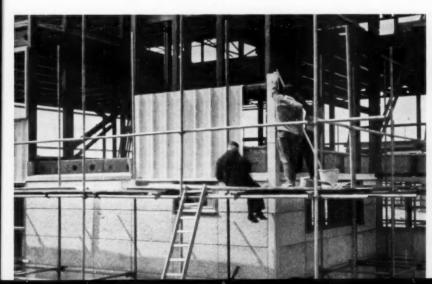




Illustrations courtesy British Ministry of Education (Crown Copyright Reserved)

LYNG HALL SECONDARY SCHOOL, for girls, also at Coventry and also built according to the aluminum system. Top photo illustrates flexibility resulting from use of the same horizontal module in both directions. Changes of site level can be taken care of by all the systems illustrated in this article. Center: black paint is here used to outline the structure; strong color on some partitions is visible from outside. Bottom: Lyng Hall is divided into a number of "houses" for 150 girls each; girls have dinner and several classes in "house" rooms, one of which is pictured

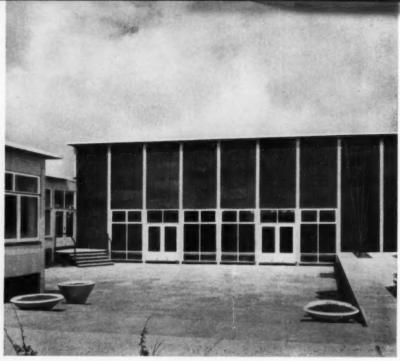
BELPER SECONDARY SCHOOL, Derbyshire, uses the Brockhouse system, which consists of a cold rolled steel frame with cladding of precast concrete on the ground floor and asbestos cement sheet on upper stories. Concrete panels first used were sound but unsatisfactory in appearance. Now an exposed aggregate is employed and considerable variation in color is available at reasonable cost. (Photo at right \otimes F. W. L. Heathcote)











WORTHING TECHNICAL HIGH SCHOOL (600 boys and girls), built in 1954, was the prototype for the "Inter-grid" system pioneered by Messrs. Gilbert-Ash — believed to be the first prefabricated modular system ever designed in pre-stressed concrete. Concrete beam components, 3 ft 4 in. long, are factory made and post-tensioned on the site by the Freyssinet method. Tower columns are 6 in. by 4 in. At Worthing, stairwells were cast on the site; in later work they have been entirely prefabricated. At right: drama court adjoins Assembly Hall. Black cladding slabs have exposed aggregate of granile chips (photo from Cement and Concrete Ass'n.)

PREFABS IN BRITAIN (Conf'd.)

No. 4 *. This method involves analysing the cost per square foot of previous projects and using the analysis to set up a target cost for each element of the building. Thus at sketch plan stage the architect knows how much he can afford to spend on each element instead of working against the less precise background of a cost per square foot for the building as a whole based on his general experience. In Britain the analysis is done by the quantity surveyor and the target costs are agreed between him and the architect. Cost planning then enables architects to know while they are designing a system of construction how much they can afford to spend on any material or element. Thus, the manufacturer does not have to fear that the components used in the prototype will have to be radically altered in order to enable the system to be sold at an acceptable price.

This means that the manufacturer need not wait until the prototype has been erected to bid for orders and go into production. Once any necessary tests such as structural or fire tests have been carried out he can go ahead, thus saving 12 or 24 months which are invaluable to him financially. One manufacturer contracted to sell the components for 15 schools while his prototype was still under construction.

There now exist quite a number of prefabricated systems. Leaving aside those which provide only part of the superstructure or are limited to singlestorey buildings, the main systems are as follows:

- a light steel frame with cladding of thin concrete slabs faced with stone dippings, and internal partitions of gypsum plaster;
- a steel frame with aluminum cladding and partitions of factorymade panels faced with gypsum plaster;
- a cold rolled steel frame with cladding of pre-cast concrete on the first floor and asbestos cement sheet on the upper storeys, and internal partitions of gypsum plaster;

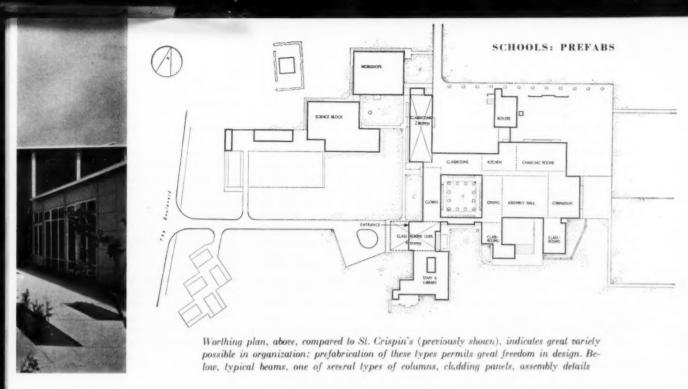
a pre-stressed concrete frame with

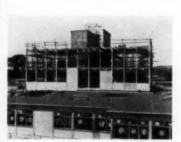
pre-cast cladding and internal partitions of gypsum plaster. This system, in spite of its adaptability, contains only twenty-six components; they are all small factorycast units which are assembled and post-tensioned on the site;

several timber systems: most of the exterior cladding is in hardwood, except in one case where it is plywood. Extensive research on fire hazards has enabled satisfactory arrangements to be made for the construction of timber schools of more than one storey.

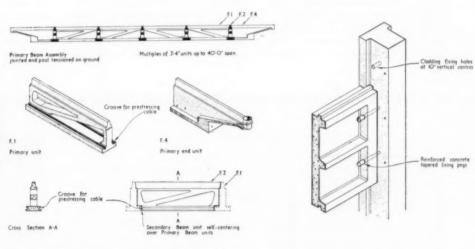
The first system mentioned is described in detail in Ministry of Education Building Bulletin No. 8 *. This Bulletin tells the story of the creation of Saint Crispin's secondary school at Wokingham designed by the Ministry's Development Group for the Berkshire County Council. This project has so far exercised more influence on post-war secondary school design than any other. The bulletin sets out much of the thinking underlying the British approach to prefabrication for schools and illustrates the practical application of a system to the problems set by the educators.

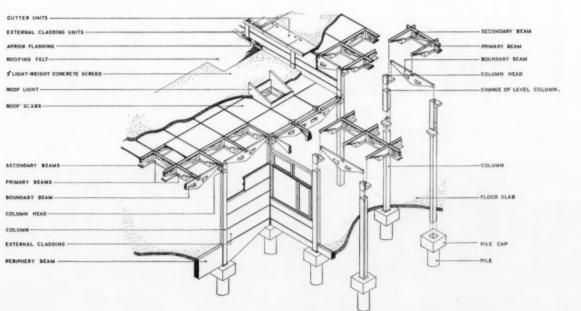
^{*} The Ministry of Education building Bulletins are obtainable from British Information Services, 30 Rockefeller Plaza, New York 20.





Photos courtesy British Ministry of Education (Crown Copyright Reserved)





PREFABS IN BRITAIN (Cont'd.)

British educators have fairly definite ideas about the kind of secondary education which they wish to develop. But those educators who have worked closely on development projects with architects have learnt a great deal from the cut and thrust of detailed discussion. It is one thing to proclaim an educational principle, such as the desirability of enabling work sometimes to be organised in small groups: it is another to be forced to think clearly precisely what that means in terms of both school organization and architecture.

What can be said of the buildings which have so far resulted from these efforts? Impartial observers seem to agree that they are efficient and economical and that in scale and use of color they are quite strikingly successful. The architects have also often devoted much care to landscaping and to the use of murals and sometimes sculpture.

Critics are, I think, less unanimous about the external appearance of the buildings. Doubts arise on two counts, texture and proportion.

Because of the dominating position of brick in the British building industry, it was clear ten years ago that anyone wanting to promote prefabrication would have to pay a great deal of attention to the quality and appearance of the external walling. The early efforts in pre-cast concrete did not fill the bill. They were too crude. After much experiment, slabs have been evolved which have a finish of exposed aggregate and which can be produced at a reasonable price. These slabs are available in three or four different colors and have a sparkle which the earlier slabs lacked.

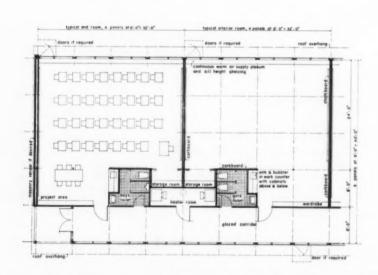
Asbestos cement sheeting is not normally regarded as an attractive material, but the corrugaged pattern used has enhanced its appearance and the decision not to use it on the first floor saves it from damage.

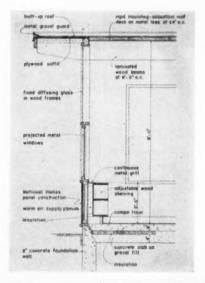
Aluminium is more readily acceptable. Although its use for walling is very unfamiliar in Britain it has a clean-cut quality which associates it in people's minds with engineering rather than building. People who look at a building in concrete compare it, subconsciously at least, with a brick building and because many modern architects who work in concrete have an imperfect mastery of external detailing, the observer is apt to think (often mistakenly) how much nicer the building would have been in brick. Aluminium is different. Visually it is so far removed from brick that the observer has consciously to construct a whole new series of values. He is then often ready to be pleased by the elegance, neatness and fine finish of the material.

Timber, of course, raises no aesthetic difficulties in a new building. The problem is how to ensure that it is adequately preserved without gradually assuming a tawdry or depressing appearance. Some success has been claimed in this respect but it is too early to judge the results.

The texture of the individual components of the external walling is, then, no longer a major handicap, but the handling of the exterior as a whole often seems to leave something to be desired. Most post-war British architects are to my mind better at the insides than at

II: PREFABRICATED AND PROPRIETARY CONCEPTS OFFERED FOR









the outsides of buildings. The prefabricated systems mentioned in this article all seem to result in buildings which give an impression of lightness and sometimes grace, and the use of a module provides a kind of organic rhythm which knits the building together and avoids the restlessness which, to me at least, characterises many modern exteriors. Nevertheless, the first sight of many of the prefabricated British schools - the immediate impact on a visitor, even one like myself who has seen large numbers of them - is not always pleasing. It is hard to say where the fault lies, possibly in the design of the eaves, possibly in the lack of variety in window and cladding sizes available for multi-storey building, possibly in the lack of ingenuity on occasions in the use of external color (or color seen externally) to relieve the monotony which is apt to result from a large walling surface of glass and concrete.

Some will regret also that in a prefabricated system devised for plan forms which require a two-way horizontal module, a pitched roof increases the number of components prohibitively. It is therefore impossible as a general rule, and luxurious if used as a "special" component on particular occasions.

One must, however, always return to the fact that these are low-cost buildings †. The encouraging thing about them, in my view, is the quality which has been achieved within the cost, in other words the value for money.

Indeed, the skill devoted to the best of them has put them among the best British post-war schools. This fact represents a fine advertisement for prefabrication even if it is not yet a guarantee that prefabrication will be widely used ten years from now when the pressure of the post-war "bulge" of children is over. Tradition, symbolised one suspects by bricks and pitched roofs and the deeply rooted British passion for individuality, is sure to attempt a counterattack.

Nevertheless most of the present systems are being widely used on other building types and there are many architects today who are more than fair weather friends to prefabrication. In-

clined to it in theory by their pre-war education and their views on the way in which building technique should develop, and pleased by the possibilities which have already been demonstrated in practice, these champions, many of them now in their 40's, will represent in the next decade an influential element in the profession. In a way it is a pity that their efforts so far have been tied to low-cost buildings. This has stimulated them to exciting achievements in clean design. But one could wish that every now and again circumstances would allow these designers to have the kind of financial elbow-room which a wealthy American suburban school board can give its architects so that they could, so to speak, open their shoulders and exploit their potentialities to the full

† To quote actual figures for purposes of international comparison is nearly always misleading. The permitted cost per child of the secondary schools discussed in this article is £264 (for the building and fixed equipment, excluding site development and furniture). The equivalent in dollars at \$2.30 to the £ is \$740; but I think that, taking everything into account \$1500 might be a fairer comparative figure to quote.

AMERICAN SCHOOLS -

NATIONAL HOMES CORP. SCHOOL UNIT (Lafayetle, Ind.) provides a complete 2-classroom basic unit, to be multiplied as required. It is essentially a wood structure with standardized laminated wood beams and columns, standardized wood-framed, plasterboard wall panels of a type familiar in National Homes' houses, and roof deck of non-combustible panels laid on metal tees spanning between beams. Individual heating units are provided; many state codes may require more fireproof construction than is contemplated for the heater room. Architect Charles Goodman reportedly participated in development; Waller Scholer is credited as designer. After inspecting a pilot model in use at Lafayetle, Ind. (site of National's main plant), an architect of substantial reputation in the school field has reported:

"Although in plan it was similar to another Lafayette school it cost much less, but nothing was said of the comparative quality of the two schools . . . unquestionably there would be high maintenance costs . . ."



What we loosely call prefabrication has not yet produced in the U. S. A. schools satisfactory to architects, excepting of course architects personally concerned with development of a system. Some non-architects may erroneously believe that architects fear the inroads prefabrication might make into established practices and fees. This is not the case.

In informal discussions with architects from all over the country, objections have been raised on three grounds: 1, quality of either structure or educational accommodations; 2, the "packaged building" concept which forces acceptance of a structure predesigned as well as prefabricated, when most architectural experience indicates that ignoring local site and climatic conditions is extremely expensive, and when educational experience emphasizes the need for an infinite variety in plan and design rather than the limitations which most American systems impose; 3, the high true cost of most systems, though initially some may seem cheap.

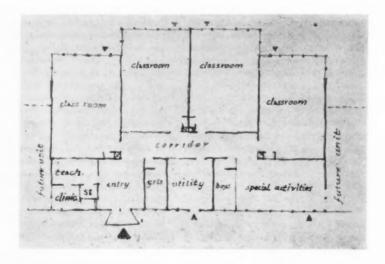
Far from fearing prefabrication, most architects will be found sincerely interested in any system which promises even

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relatively good quality, without severe design restrictions, at reasonable true cost. They do worry about the client's interest: In buying a bargain does he pay far too much for the quality of the building he gets? Furthermore, the architect's position is fairly well protected; most states require localities to hire architects if state funds are involved. As public experience with low-quality prefabs multiplies, architects expect their competition to become increasingly unimportant though high-pressure campaigns may sell quite a few jobs. Another factor causes worry: an architect hired to "do" a prefab school has a continuing responsibility for the building's quality and performance, while the extent of the prefabricator's legal responsibility is a question.

Specific criticisms of the three illustrated types have been made by reputable architects after intensive investigation. The Maximlite school is not truly prefabricated; it is a copyrighted design employing conventional materials available, mostly in standard sizes, on the open market. Cost advantages which might accrue through mass purchasing of building materials through a central Maximlite source have, we are informed. seldom been realized, because the average local contractor has usually been able to buy materials just as cheaply. What manufacturer is going to jeopardize large segments of his market for a favored customer? A Maximlite job in New York state would have cost \$1170 per pupil if

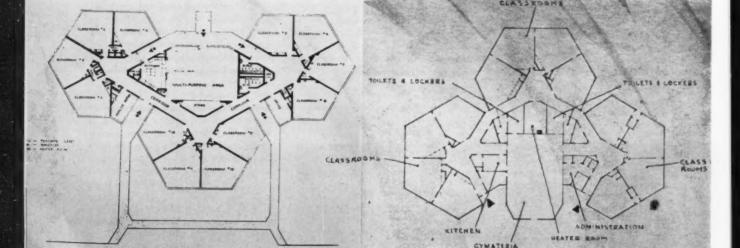
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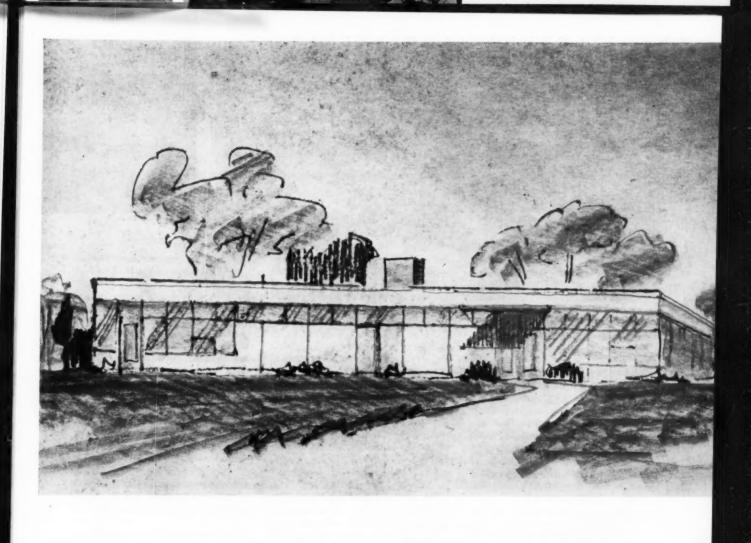
STRUCTO SCHOOLS (Structo Schools Corp., 1 State St., Boston, Mass.) are reportedly based on design research by Anderson-Nichols & Co. and marketed with appealing financial arrangements backed by extensive banking resources. Plans and information generally available are copyrighted and so cannot be reproduced in detail, but sketches above and right are believed to be correct. Construction is reportedly of quite high quality, consisting of an assembly of steel members and porcelain enamel panels selected from standard items available on the open market and selected for permanence, safety, attractiveness and low maintenance to assure a 50 year life. In many respects the plan is admirable, we are told; the building is designed to be erected in 90 days; it can be added to as a continuous building or used in "campus" plans. Financing is described in text

AMERICAN EXAMPLES

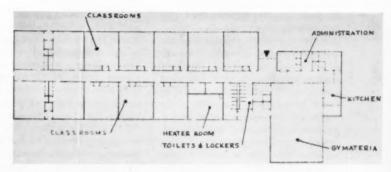
Maximlite school built at Fayetleville, Ark.



Maximlite variation proposed for a Maine community



MAXIMLITE SCHOOLS (1st National Bank Bldg., Fayetteville, Ark.): original classroom and arrangement of rooms designed and copyrighted by T. Ewing Shelton, Architect. Local architects have been licensed to use the "system" in various arrangements; a degree of flexibility is possible. Construction: masonry bearing walls with flat roofs; exterior walls glass block (facing all points of the compass) above clear-glazed venting sash. A comparison of one variation with an efficient conventional plan for the same situation appears herewith. New York state school authorities required changes and improvements to bring another variation up to state requirements; bids came in far above preliminary estimates. Texas authorities rejected another for poor ventilation, too much glare from glass block areas, faulty orientation, inferior finishes. Massachusetts authorities have required masonry around heater rooms on still another. Others have called the classrooms small, tackboard insufficient, ventilation inadequate, etc.



For purposes of comparison with the Maximlite school proposed for a Maine community (facing page) the above conventional plan was developed by a competent architect, incorporating the identical useful areas. The accompanying comparison resulted. Conclusion: conventional plan ought to be less expensive if built of the same materials, under the same conditions

COMPARISON

COMPARISON				
Plan	Maximlit	e Cor	ventional	
Total area	18,000	sq ft	17,400	
Perimeter	704	lin ft	674	
Corridor area	2,570	sq ft	2,050	
4 in. block partition	330	lin ft	231	
8 in. block partition	851	lin ft	846	
12 in. block partition	114	lin ft	100	
Area per classroom	730	sq ft	730	

WATER CONDITIONING

by Warren D. Calhoun and J. William Moffett*



WITH THE STEADY MIGRATION of new construction beyond established metropolitan areas, more and more houses and buildings must rely on private wells for their water supply. Many municipal water systems also use underground sources. While architects and their clients will insist on a bacteriological check of well water before it is piped into a building, the same degree of caution is not exercised regarding some of the deleterious qualities of water such as hardness. Although water may be perfectly safe for human consumption, it can at the same time cause thousands of dollars worth of damage in large buildings and be a many-sided nuisance in all types of buildings. This can be equally true of water supplied from either private or municipal sources.

The discussion that follows is limited to water problems in homes, institutions and commercial buildings where the water is used for human consumption, sanitation, and for low-pressure heating systems. Many other problems are applicable to the process industries and to medium- and high-pressure boiler plants, but because of their complex nature, require the attention of experts.

Water is destructive because of the things it contains. Primarily these are dissolved minerals and gases. Many of them are colorless, odorless and tasteless and thus are practically impossible to detect by a casual examination of the water. Yet they can do a great deal of damage as soon as the water is piped, heated, or used for housekeeping chores.

Any of the following conditions, depending on the end use of the water, will cause trouble in buildings:

- 1. Hardness
- 2. Iron
- 3. Corrosive factors

HARDNESS

Hardness is one of the most geograph-

* Both of Ion Exchange Application Group, Rohm & Haas Co., Philadelphia, Pa.

ically widespread causes of water problems (see map). Water is hard because it contains calcium and magnesium.

Water hardness may be expressed in "grains per gallon," one grain being equal to about 2/1000 ounce of hardness (calcium carbonate) per gallon. In industrial terminology water hardness is expressed as parts per million (ppm). One grain equals approximately 17 ppm.

Water of 0.4 grains and less is generally considered soft. Above 3 to 4 grains of hardness, water becomes progressively more troublesome, and above 8 grains—which is characteristic of the water supply of more than half of the nation—the water becomes a definite nuisance and a serious hazard to the life of plumbing and all water-using equipment.

Why is hard water objectionable? The undesirable effects of hard water can be grouped into two major categories: (1) damage to water-using equipment, and (2) interference with everyday household and institutional operations, such as laundering, cooking and bathing.

Hard Water Damage

1. Heaters, boilers and piping: When hard water is heated, the calcium and magnesium minerals form a hard, granite-like deposit (called scale) on the inside of pipes and other equipment through which the water passes. The layer of scale grows continuously, eventually reducing the flow of water to a trickle.

In boilers and water heaters, scale has serious consequences. First, it acts as an insulator, cutting down on heat transfer. It is not uncommon for scale in heater and boiler tubes to reduce heating efficiency by 15 per cent.

Second, because of the insulating effect of the scale, the boiler must be operated at higher-than-normal temperatures to provide the required heat transfer. These excessive temperatures weaken pipe walls, leading to burn-out, blistering and rupture.

The scale problem in heaters and

piping can be expected to intensify because of the growing use of home laundering equipment. This equipment calls for more water and at higher temperatures than have heretofore been required for household use. Both conditions will accelerate scale build-up markedly.

In addition to heaters and boilers, other water-using appliances are susceptible to scale formation. For example, the heat exchange units in central air conditioning systems contain many feet of small-diameter tubing which control heat exchange efficiency. When this tubing clogs with scale, the conditioner can no longer cool adequately. The same is true of any heating, cooling or humidifying system to which water must be added continuously to make up evaporation losses.

2. Sanilation: Besides diminishing the effectiveness and service life of most types of water-using equipment, hard water increases operating expenses in many hidden ways. For example, the advantages of soft water in providing better washing action, cutting soap costs and saving equipment are so pronounced that no commercial laundry would attempt to operate without a water softener, even in so-called soft water areas, where the water is 2 to 3 grains in hardness.

Whenever soap is used in hard water, a certain percentage of the soap used is destroyed. Calcium and magnesium combine with soap to form a scum or curd.

Besides representing wasted soap, the scum formed in hard water reduces fabric life. The soap curds deposited on the fabric by the hard water are fused onto the fibers during the subsequent drying and ironing. After repeated washing the fibers become quite brittle.

When hard water is used for bathing, washing, shampooing, etc., its effects are most noticeable and most trouble-some, at least where the individual is concerned. Hand soap does not lather,

Much of the water used in this country is not as harmless as it appears. In fact, more than half the water supply in the nation is hard—resulting in clogging of pipes and washing difficulties. There are other serious problems, too, such as iron and corrosiveness. The nature of these water problems and methods of treating them in domestic, commercial and institutional buildings are discussed in the following article.

dishes and glassware do not rinse clean, hair and skin feel parched.

What to Do About Hard Water

There is a fairly sharp demarcation between the type of equipment that is practical for the home on the one hand, and for commercial and institutional buildings on the other. The home owner's choice is more limited by initial cost, convenience, simplicity and size. In an institutional building, the choice of equipment depends on the quality of the water as received, quality required for the end use, volume needed and operating costs. The availability of more space, trained operating personnel, and the probable use of the water for nonhuman purposes provides a wider range of possibilities of water conditioning methods. For these reasons, the following discussion of conditioning methods will make a distinction between domestic and commercial problems.

As in most other water conditioning procedures, hardness can be handled in one of two ways: by removal or retention. Removal extracts the minerals from the water; retention prevents or minimizes the scale-forming materials from depositing by using additives to keep them in solution.

For domestic installations, the most convenient softening method by far is ion exchange. Water softened by ion exchange is equally suitable for human consumption, personal sanitation and for all water-using appliances and equipment. Its initial and operating costs, convenience and simplicity for the relatively small volumes of water used in the home, make the ion exchange softener an ideal choice.

Ion exchange, as applied to water softening, consists of removing the "hard" ions (calcium and magnesium) from the water and substituting other "soft" (sodium) ions in their place. The actual exchange is performed usually by a synthetic resin, a fine bead-like material. As the hard water comes in

contact with the resin, the calcium and magnesium ions attach themselves to the resin. In the process, sodium ions are displaced from the resin and released into the water in exchange.

Softening capacity is restored by a process which is the reverse of the softening process. Salt (which provides sodium ions) is admitted into the resin tank, and the sodium ions displace the calcium and magnesium ions from the resin. After a short rinse period, the resin is ready to begin another softening cycle.

Home Water Softening Equipment

The home softener is compact and is designed to harmonize with other modern household appliances. Most domestic units resemble a modern hot water tank and can be installed unobtrusively almost anywhere. Operation of the softener is shown in Fig. 2.

Softeners are made in various capacities. One manufacturer offers a typical series of domestic softeners rated at 45,000, 60,000 and 90,000 grains. The correct size depends on two main factors: First, the anticipated consumption of soft water by the family; and second, the hardness of the water supply.

Capacity for any particular installation is calculated with a convenient rule of thumb, based on the following information:

- (a) number of persons in the family (automatic washer demand must be considered)
- (b) extent of soft water service
- (c) water analysis (particularly hardness and iron concentrations)

Equipment engineers allow about 50 gallons per person per day if soft water is used throughout the home. An automatic washer uses about 30 gallons per load and is generally considered as an extra "member" of the family.

Two types of systems (called "one tank" and "two tank" models) are commonly used in the home. In the onetank model, the softener is regenerated by pouring the salt from the sack directly into a hatch on top of the tank. Thus, no additional valves, pipes or tanks are required. With the two-tank model (Fig. 3), the salt is kept in convenient solution form in a separate tank, and is admitted into the softener merely by positioning a valve. In most cases the salt solution tanks hold enough salt to regenerate a softener two or three times without refilling.

The table accompanying Fig. 3 lists the important typical minimum dimensions that must be allowed when planning the location of a softener. The dimensions given apply only to softeners using ion exchange resins. Softeners which contain the lower capacity silicate zeolites must have greater volume to give equivalent softening capacities.

Commercial Softening

In commercial and institutional installations, hardness is also commonly removed with ion exchange softeners. However with certain types of water containing carbonate hardness, some of the older softening processes which remove hardness by precipitation, are sometimes employed if the water is to be used in the heating system only. These involve the addition of one or more chemicals to the incoming water to precipitate and remove the hardness as a sludge. Two of those processes are: (1) lime-soda softening and (2) hotprocess phosphate softening, sometimes followed by ion exchange. The factors in the selection of any of these processes are quite complex and beyond the scope of this article. In general they are used in the treatment of hard waters containing compounds of high turbidity, suspended solids, and silt all of which are removed during the precipitation of the hardness thus eliminating the need for preliminary filtration. Space requirements for this type of process are usually extensive, because of the size of the settling tanks used for sludge settling.

Internal treatment is another technique used to prevent or minimize scale problems. This involves the use of complex phosphates or organic compounds and are usually applied to boilers and other confined water-using systems where the water is not used for human consumption or sanitation. These compounds must be continuously introduced into the system by some metering device in proportion to water flow. Such compounds, usually used in combination with organic additives, prevent scaling by "binding" the calcium and magnesium into a sludge-like precipitate and thus prevent formation of the hard, dense scale on heating surfaces. The sludge is removed by periodic boiler blowdown. These additives will prevent scale deposits from water of fairly high hardness, but the method should be approached with caution and in accordance with U.S. Public Health Service recommendations.

IRON

Iron-bearing water is a nuisance practically wherever it is used. Iron will stain plumbing fixtures and porcelain cooking utensils. Clothes laundered in iron-bearing water will develop yellowish stains. Iron also imparts an objectionable appearance and, sometimes, taste to the water and to foods cooked in it. Under certain circumstances it can be troublesome in water softeners. Iron compounds can form scale which is a common cause of constrictions in valves, piping and boiler tubes.

The iron encountered in water systems may come from two very different sources and it is essential to identify the source before treatment is recommended. In one case the iron is a corrosion product, produced by corrosion of the metals within the system. No remedy is effective against this red water unless it is designed to stop the corrosion. Such measures will be discussed in the next section.

However, very frequently iron comes directly from the water source, particularly if the source is a deep well in which natural conditions favor the dissolution of iron-bearing soil minerals into the water. Manganese is also picked up in the same manner, and creates similar difficulties, but its occurrence is less frequent. The U. S. Public Health Service recommends that the total content of iron and manganese in municipal water systems be limited to 0.3 ppm.

When iron-bearing water is first drawn from a deep well, it is clear and colorless. After aeration or exposure to air, the water develops a milk-like haze and later a yellow or red-brown precipitate of ferric oxide. If the water sample is already red when taken from the system, and the system does not contain a retention tank or aerator where iron-bearing water could oxidize, corrosion should be strongly suspected as the source of trouble.

Iron can be removed by severa! processes used individually or in combination. Selection of the method is dictated by the form of the iron present, the amount present, and by whether the water is to be softened also. The processes fall into two general categories: removal of the iron; and retention in a form that prevents deposition.

Domestic Iron Treatment

In domestic applications where the wa-

D-3.5 GRAINS PER CALION

3.3-7 GRAINS FER CALION

7-18.3 GRAINS PER CALION

10.5 AND ARXIVE

Variations in water hardness in different sections of the country.

Dark areas indicate hard water; while or light areas softer water

ter contains soluble iron as well as hardness, the iron can be removed in the ion exchange softener at the same time the hardness is removed provided the iron does not have an opportunity to precipitate before reaching the softener. Where the concentration of soluble iron is excessive or iron bacteria are known to be present, a separate iron filter is recommended.

Where the water is already soft, there are available special iron-removal units which utilize a catalyst to precipitate the iron by combining it with the oxygen normally present in the water. The iron thus precipitated is removed periodically by reversing the water flow through the unit and backwashing. Where the oxygen content of the water is too low, precipitation may be effected by using manganese-treated greensand whose oxides act to precipitate the iron. The bed must be backwashed to remove the accumulated iron precipitate, and must also be regenerated periodically with potassium permanganate to restore the oxidizing ability of the greensand. Because of high regenerant costs, this process is generally limited to waters of fairly low iron content if the volume of water treated is high. The water processed in these filters is suitable for human consumption.

On farms where space is available, the iron can be precipitated by aeration in settling tanks where the atmospheric oxygen converts the soluble iron into insoluble form. Because of space requirements, this method is not feasible in suburban areas.

Commercial Installations

In commercial and institutional installations, a greater variety of methods is available. The iron can be removed simultaneously with softening, where lime, lime-soda softening or ion exchange are applicable. Iron is commonly removed by aeration (consisting of intimately admixing air and water, usually by spraying the water through fine nozzles) which oxidizes the iron into insoluble form, later to be removed from settling tanks. In other cases, usually involving swampy surface waters containing organic matter (which interferes with precipitation), the iron must be removed by chemical coagulation followed by filtration.

Retention of iron is sometimes practiced in preference to removal because of the lower equipment costs in certain cases. Retention involves adding surface active materials such as polyphosphates and organic sequestrants in sufficient quantity to stabilize or bind the iron into soluble form and thus prevent precipitation. This procedure becomes somewhat costly when the water is heated, recirculated or retained in the system for a long time because of the high concentration of complexing agent needed to assure retention. It is therefore most applicable for once-through cooling systems where the water remains in the lines only for 20–30 min. and then goes to waste. The concentration of complexing agents should be checked before the water is consumed.

CORROSION

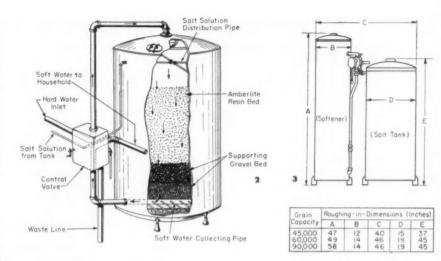
Effects of corrosion may be found anywhere in a water system, but are particularly severe in boilers, heaters and hot water lines, where the high temperatures accelerate the corrosion rate.

Corrosion develops because of what the water contains and because of the way the water is used. Some contributing factors are acidity, low solids content, galvanic action, elevated temperature and high concentrations of dissolved oxygen and carbon dioxide. Usually it takes a combination of conditions, rather than one individual factor to produce corrosion and for that reason the problem of corrosion prevention is a highly complex one.

Many of the methods developed for preventing corrosion by eliminating its causes are tailored for commercial and industrial installations. Because of the cost and technology involved, the householder can do little to eliminate the causes of corrosion, except in a few specific instances. The householder's major weapon against corrosion is to protect the system with various chemical compounds which either form a protective coating over the vulnerable surfaces or "deactivate" the metal and make it less susceptible to attack. These materials rarely prevent corrosion entirely.

Domestic Anti-Corrosion Measures

One of the commonly-used compounds for protecting household systems against corrosion is vitreous phosphate, which forms a thin protective coating over the metal. This is introduced into the system from a pot feeder installed in a cold water line, where the phosphate is slowly dissolved by the flowing water. Less than a pound a month is used for the average home. This phosphate gives fairly good protection against corrosion and scaling except in fairly acidic water, at temperatures above 212 F, or where the water remains in the system for long



Left: components of a typical water softener indicating its operation. Right: space requirements for a domestic softener and accompanying salt lank which regenerates resin

periods with little make-up. Vitreous phosphate may be used to treat water used for heating, sanitation or human consumption. It does not soften water. The Public Health Service has no objection to the use of complex phosphates in water up to 10 ppm.

For corrosion protection in domestic heating systems, the Steel Boiler Institute treatment, utilizing a buffered chromate, has proved very effective against corrosion from all causes. This compound is usually added to the boiler by the manufacturer and it need not be replenished unless the boiler is drained. This compound must not be used in lines carrying water for human consumption.

Corrosion Protection for Large Installations

In large installations, the treatment used usually is directed toward removing the causes of corrosion directly. Oxygen dissolved in water that is somewhat acidic is one of the most common causes of corrosion of iron and steel. Its symptoms are pitting, tuberculation and eventual blocking of water lines by corrosion products. Corrosion by oxygen is most rapid in hot water lines, but occurs in cold water piping also.

Water obtained from surface supplies will almost always contain high concentrations of oxygen, whereas deep underground sources will usually contain little or no oxygen. Oxygen-free water will become saturated with oxygen if the water is aerated to remove other gases.

The most effective method for remov-

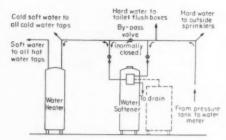
ing dissolved oxygen is to deaerate the water by heating in an open or deaerating type of heater, followed by chemical treatment to reduce the residual oxygen to non-corrosive form. Sodium sulfite is most frequently used for this purpose because it is both economical and easy to handle. This water should not be used for human consumption.

Carbon dioxide — another prime cause of corrosion in iron and steel water lines — can be present in surface water but more commonly occurs in underground supplies. However, the most prolific source is by the decomposition of water-borne carbonates and bicarbonates.

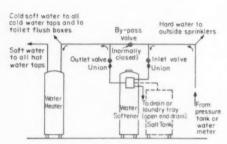
Corrosion by carbon dioxide is found more frequently in condensate lines than in the boiler or in feedwater lines. Usually the corrosion takes the form of grooves worn into the pipe wall although it may also cause a general roughening of the wall. Threaded joints and elbows tend to corrode sooner than straight piping runs.

Low concentrations of carbon dioxide in the steam condensate should not be taken as assurance that corrosion will not occur. Small concentrations may be corrosive if the condensate flows at a high rate. One definite method of checking the corrosive potential is to expose a sample of metal to the condensate by mounting it in a simple by-pass arrangement in the condensate line and measuring the rate of corrosion after several weeks of exposure.

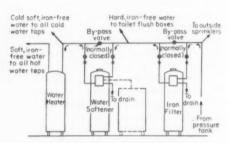
Free carbon dioxide can be removed by heating the feedwater in a deaeration-type heater. However, the carbon



Installation for soft water throughout a house except toilet flush boxes



5 Complete domestic soft water treatment. Hard water is used for sprinkling only



Water softening, except for flush boxes, plus a filter to remove iron content

dioxide occurring in the condensate system by the decomposition of carbonates and bicarbonates must be eliminated by other measures. One method is to remove them completely or partially by pretreating the feedwater with an anion exchange resin. Where a small amount of hardness can be tolerated in the water, the thin layer of scale that will form will often act as a protective coating for the underlying metal, but this is effective only in supply lines. For steam and condensate line protection a film-forming amine, which deposits a very thin water-repellent film, appears successful in preventing carbon dioxide attack.

In domestic systems dissolved carbon dioxide can be removed directly by a neutralizing filter which contains a bed of crushed limestone. The carbon dioxide is precipitated as a solid material which must be periodically removed by backwashing the bed. This filter reduces the acidity of the water, but releases free calcium in the process. It should therefore be installed on the upstream side of the softener and the softener should be sized to handle this additional hardness. Water treated in a neutralizing filter is perfectly fit for human consumption.

Ammonia, which usually originates by decomposition of organic materials in the water supply, is a hazard to pipes and fittings made of copper or copper alloys. Usually, this decomposition occurs in the boiler so that the greatest corrosion can be expected to occur in the condensate lines. Also the copper dissolved by the ammonia can itself be troublesome by returning to the boiler in the recirculating lines to form heat-resistant deposits or galvanic cells.

Free ammonia may be removed by chlorination, ion exchange, or the injection of film-forming amines.

A familiar cause of corrosion in piping systems is galvanic action. Where two dissimilar metals, for example copper and iron, are coupled together a galvanic cell will form causing the gradual eating away of the more anodic metal. Thus, iron will corrode in the presence of copper. The most obvious preventative is to avoid coupling dissimilar metals. Magnesium anodes installed at the points of attack may also help in this situation.

For other types of water problems, such as offensive odors or tastes, aeration or filtering tanks containing activated carbon are used. A sand filter will remove turbidity, suspended clay, silt and organic matter that would tend to clog the rest of the system. Special problems such as very high concentrations of dissolved materials or the presence of hydrogen sulfide occur in some regions, and these conditions also require special consultation with water conditioning experts.

WATER ANALYSIS

The destructive effects of the various dissolved materials on a plumbing system make it important to have a reliable water analysis before specifying equipment. Most water analyses report on the following materials (although other materials will be analyzed under special circumstances): hardness, pH, alkalinity, calcium, magnesium, chlorides, sulfates, silica and iron.

It is relatively easy to get a reliable water analysis regardless of your geographical area. If your area is served by either a publicly or privately-owned water utility, that organization undoubtedly has a complete analysis of its water obtainable for the asking. Furthermore, you can frequently obtain from the utility recommendations on the most serviceable pipe materials and advice on any special filters needed.

When the building is supplied from a private well or stream of unknown quality, it is practically mandatory to have a complete water analysis before making recommendations about equipment. Even if a second well is dug in a developed site, or an existing well is extended, a water analysis should be made. It is not uncommon for adjoining wells to furnish totally different water if they tap into different strata containing diverse mineral compositions.

You can obtain a water analysis free or at relatively little cost from virtually any manufacturer of water conditioning equipment. Certain pipe manufacturers will recommend the correct type and grade of pipe on the basis of a water sample you send them. In addition, there are many competent commercial laboratories that give a complete analysis and make detailed recommendations.

INSTALLATION TIPS

- (1) Be sure to install a by-pass line around the softener and filter tank (if any) so that the water supply will not be interrupted while the softener or filter is being regenerated or serviced.
- (2) Use pipe sizes recommended by the equipment manufacturer and select red brass, copper, or galvanized pipe, as required to give satisfactory service under the known water conditions.
- (3) Plan drainage lines from the softener carefully. Most plumbing and sanitary codes require an air gap in the softener drain line to avoid the possibility of contaminating the softener with drainage back-ups. In cases where the utilities area has a concrete floor, the standard arrangement of placing a grid in the floor emptying into a receiver, trap, and thence to the sewer is recommended.
- (4) Standard water system working pressures need not be boosted to operate a softener. The standard pumping pressure of 25 to 40 psi of most pumps is entirely adequate for softeners. Actually most units will operate satisfactorily in a pressure range of 25 to 125 psi; above and below this range pressure regulators will be necessary. Make certain that the water system has enough pressure to backwash the softener.

A CHECK LIST OF WATER PROBLEMS AND RECOMMENDED TREATMENTS

		TREATMENTS		
DIFFICULTY	EFFECTS	Residences	Institutional and Commercial	
HARDNESS Calcium and Magnesium Minerals in Water Supply	1. LIME SCALE IN WATER-USING EQUIP-MENT (boilers, heaters, water lines, air conditioners, appliances, utensils, etc.), causing: (a) Restricted flow, pressure loss (b) Reduced heat exchange efficiency (c) Destruction of boiler tubes (over-heating) (d) Premature replacement of parts and equipment 2. LAUNDERING AND WASHING DIFFICULTIES: such as: (a) Poor sudsing, soap scum deposit, grayish tinge on fabrics, difficult rinsing (b) Loss of fiber strength in fabrics (c) Cloudy film on dishes and glassware 3. PERSONAL SANITATION DIFFICULTIES: (a) Poor sudsing for washing, shaving, shampoos, etc. (b) Gummy film deposited on sinks and tubs, as well as hair and skin	1. HARDNESS REMOVAL: Ion Exchange Softening—Note: water suitable for both human consumption and equipment use 2. HARDNESS RETENTION: Complex Phosphates—Note: water suitable for equipment; also may be used for human consumption if concentration used not too high	1. HARDNESS REMOVAL (a) Ion Exchange Softening—Note: water suitable for both human consumption and equipment use (b) Lime-Soda Softening (c) Hot-Process Phosphate Softening Note: (b) and (c) involve precipitation of hardness and sludge removal; water primarily suited for equipment use 2. HARDNESS RETENTION (a) complex phosphates (b) organics Note: (a) and (b) involve additives generally for boiler feed applications	
IRON AND MANGANESE Unoxidized Iron or Manganese in Wa- ter Supply (Not Pipe Rust)	FIXTURE STAINING: Permanent rust stains on porcelain SCALE IN WATER-USING EQUIPMENT (particularly boilers and water lines): same effect on equipment life and operation as lime scale LAUNDERING DIFFICULTIES: Rust stains on linens COOKING DIFFICULTIES: Unappetizing brownish water for drinking and cooking	1. IRON REMOVAL (a) Ion Exchange—if practical to remove hardness and iron simultaneously (b) Iron Filter—when removal by ion exchange not practical (c) Aeration and Settling—if space available, usually on farms and ranches Note: (a), (b) and (c) suitable for both human consumption and equipment use 2. IRON RETENTION—(no prac- tical method)	1. IRON REMOVAL (a) Ion Exchange—if practical to remove hardness and iron simultaneously (b) Aeration and Settling Note: (a) and (b) OK for human consumption and equipment use (c) Chemical Softening By Precipitation Note: (c) may involve lime-soda, hot process phosphate processes, if water hard. Water primarily for equipment use 2. IRON RETENTION: Complex Phosphates and Organic Sequestrants—usually economical only for cooling water used on once-through basis; water not for human consumption	
FACTORS CARBON DIOXIDE (most prevalent in well water)	Corrosion, grooving or roughening of water lines, particularly steam or condensate lines	REMOVAL—neutralizing filter NHIBITORS a for heating system only: Steel Boiler Institute (SBI) buffered chromate treatment (b) for general water lines: feed complex phosphates	REMOVAL (a) deaeration (b) ion exchange RIMIBITORS—filming or neutralizing amines	
OXYGEN (normally occurs in surface water; may also be picked up during aeration)	Pitting, tuberculation and general corrcsion in heat exchangers, condensate lines, return lines, etc.; red water; scaling by corrosion products	REMOVAL—not economical INHIBITORS—see 2 (a) and (b) under carbon dioxide	REMOVAL (a) deaeration (b) add reducing agent	
GALVANIC	Corrosion around joint of the two metals	PREVENTION—avoid direct cou- pling between dissimilar metals	PREVENTION—avoid direct coupling between dissimilar metals	
AMMONIA	Corrosion of copper and zinc alloys	REMOVAL—not economical INHIBITORS—see 2a and 2b under carbon dioxide	REMOVAL (a) ion exchange (b) chlorination (c) deaeration	
ACIDITY (from acid materials in water)	General corrosion depending on degree of acidity	REMOVAL (a) extract acid materials by any applicable process above (b) neutralize with alkalis	REMOVAL (a) extract acid materials by any applicable process above (b) neutralize with alkalis	
		INHIBITORS—complex phos- phates if water not too acidic		

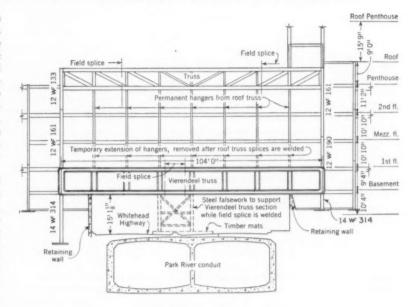
WELDED VIERENDEEL TRUSSES FRAME HIGHWAY-SPANNING LIBRARY

Five Vierendeel trusses — two of which are probably the largest and heaviest ever fabricated and erected in the United States — support a new public library which spans the Whitehead Highway in Hartford, Conn. Construction of the library above the six-lane highway, which travels over a twinconduit through which a river flows, proceeded while two-lane traffic in both directions was maintained, and great care was taken to ensure that the highway surface was not damaged.

The building itself is an all-welded steel frame structure, about 192 by 174 ft, consisting of a basement, first floor, mezzanine and second floor, with a penthouse for elevator and staff rooms above the second floor. The Vierendeel truss was selected for use because the open spaces which its design provides afford an undivided area for book storage in the basement of the library.

The Vierendeel trusses carry the stack room floor framing on the bottom chord and the first floor framing on the upper chord. The unbroken area on the bottom chord, convenient to both the general reading room and the charging desk, provides the required large area for a stack room to shelve books. The first floor of the structure was set by the sidewalk elevation of Main St., the main entrance. Adequate clearance was afforded over the highway. Conventional trusses above the second floor support the roof and ceiling, with suspended hangers carrying the mezzanine and second floors, as shown in the typical section above.

Five Vierendeel trusses were used:

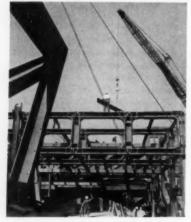


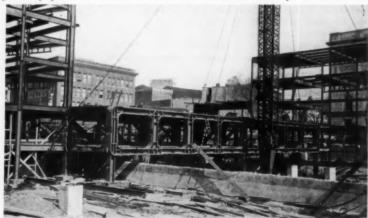
two have eight panels spanning 104 ft and weigh 94 tons: two have seven panels spanning 91 ft and weigh 73 tons; and one has seven panels spanning 91 ft and weighs 53 tons. As shown in the photographs below, the trusses are made up of top and bottom chords and vertical web members, thus eliminating all diagonal members and opening up the interior for use. These chords are strengthened by flange and web plates and also by curved plates at each knee and tee section. All the trusses were spliced at the mid-span. As shown in the drawing, temporary steel falsework was erected on the center strip of the highway to support the truss sections until the field welds were made. The end post of the truss serves also as a section of a building column. The end reaction of the truss is transmitted to the column below through bearing. The columns above the end post of the truss bear on the top chord of the truss.

The Vierendeel trusses, fabricated and erected by the Lebigh Structural Steel Co., are named for Prof. Arthur Vierendeel of the University of Louvain, Belgium, who first used them in 1893. Architects of the library were Schutz and Goodwin, Hartford; structural engineer, Robert Loomis, Windsor, Conn.

(More Roundup on page 238)

Fifty-ton half trusses are erected first, as shown in photo (left below). Mid-span splices connect the halves, and completed Vierendeel trusses span highway (right). Photos and drawing courtesy of The Lincoln Electric Co. and the American Institute of Steel Construction

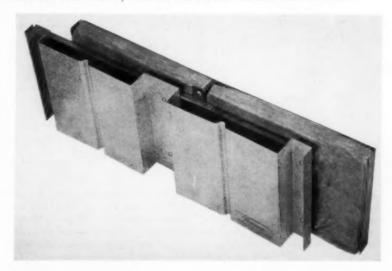




NEW WALL SYSTEMS ARE LIGHTWEIGHT, HAVE LITTLE MAINTENANCE

A Metal-faced, Insulated Wall Panel, Fenestra Type FA, is shipped to the site in components and assembled. Erection and fabrication take place at the same time, which makes for greater economy, says the manufacturer, than has previously been experienced in light-gauge metal, curtain wall construction.

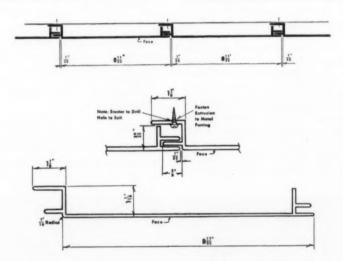
The panel consists of a back-up plate and channels, insulation and light-gauge fluted metal facing, as shown in the illustration right. The flat back-up plate, with Z bar attached, is welded or bolted to the structural supports, and the horizontal channels are secured to the Z bars by means of sheet metal saddle clips and drive rivets. Batts of 4-lb intensity Fiberglas of 11/6-in, thickness are forced in between the Z bars and channels so snugly that even high winds during erection won't dislodge them. Before the exterior metal sheet is positioned, an asphalt-impregnated felt strip is pasted to the outside of the horizontal sub girts to prevent thermal conductivity through the metal. The exterior metal is then attached by means of drive rivets, and



the side joints are vit-clinched.

The FA panel is 24 in. wide, nominally 3½ in. deep and is manufactured in lengths up to 31 ft. It is available in 16-gauge aluminum and 18-gauge galvanized steel. In the aluminum model it

can have either a leatherette finish, as shown above, or a mill finish. The insulating value of the panels approximates that of a 16-in. masonry wall, according to Delroit Steel Products Co., 3113 Griffin St., Detroit 11, Mich.



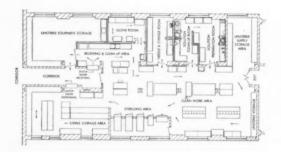
Extruded Aluminum Elements are used in another wall system, the Snap-On-Wall. This interior wall system makes possible variations of wall treatment to meet almost any requirement. Five extruded aluminum channels form the basis for this versatile wall: inside and outside corners, edging, furring and snap-on members. These channels can be attached to old walls or studs with nails or screws or even with adhesives. Then perforated hardboard or metal panels are inserted into a snap-on member like the top extrusion in the photo-

graph right and snapped into channels like the bottom extrusion in the photo. By snapping the panels into or out of position, the walls can be replaced, painted or cleaned. By using perforated ra les and a sound absorbing material between panel and wall, an acoustical wall is possible. The aluminum channels are available in lengths from 8 to 20 ft; the perforated and metal panels in widths up to 4 ft. The system, developed with the assistance of the Aluminum Co. of America, is produced by Erdle Perforating Co., Inc., Rochester, N. Y.

A Porcelain Enameled Aluminum Panel System for wall surfaces and for decorative fins and other trim features produces a flat wall with no horizontal joints. Basis of the system is an aluminum extrusion with an interlocking edge feature, details of which are shown at left. All pieces may be attached directly to structural steel, thus eliminating the need for special channels or furring strips. The result, when long extrusions are used (up to 10 ft high), is a finished wall of semi-matte or high gloss surface with very close joints. All dimensions shown in the details above are before the porcelain enamel finish is applied. Ingram-Richardson Mfg. Co., Beaver Falls, Pa.



(More Products on page 260)



Copper and Brass in piping and tubing, building sheets, heating and termite shields are the subjects of six new publications: "Modern Applications of Sheet Copper in Building Construction," a 144-page technical handbook (AIA File 12). "Radiant Heating," 20 pp (AIA File 30-C-44). "Protection against Termites with Copper Shields," 12 pp (AIA File 19-A-34). "Brass Pipe," a 60-page handbook of plumbing installations (AIA File 29-B-4). Tube," a 72-page handbook for plumbing and heating installations (AIA File 29-B-41). "Maintenance, Cleaning, Finishing and Coloring of Copper, Brass and Bronze," 32 pp. A general brochure, "Why Leading Architects, Engineers and Builders Choose Copper to Build America," is also available from the Copper & Brass Research Association,

Unplasticized Rigid PVC Pipe. Two types, Alpha 101 and Alpha 102, are described, together with charts showing their mechanical, thermal, electrical and other properties, in one folder, and another folder presents threaded and socket solvent cement fittings recommended for use with them. Alpha Plastics, Inc., 15 Northfield Rd., West Orange, N. J.

420 Lexington Ave., New York 17, N. Y.

Electrical Equipment. Service entrance equipment, safety switches and lighting and distribution panelboards are cataloged in a 32-page manual which also has an engineering data section. American Electric Switch Div., Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio.

The Lumenated Ceiling is the title of an 8-page brochure which describes, with specifications and installation instructions, a plastic ceiling installation by Thermotank, Inc. (AIA File 31-F-290 and 31-F-21.) John J. Fannon Sales Co., 1469 Algonquin Ave., Detroit 15, Mich.

HOSPITAL STERILIZERS

The floor plan for a large hospital (approximately 350 beds) shown at left is just one of many typical plans for locating of sterilizing equipment presented in a well-illustrated, clearly presented, 48-page booklet entitled "Architects' Guide to American Sterilizers for Modern Hospitals" (AIA File 35K). Even though a central sterile supply department is extending its responsibilities in modern hospitals, says this book, limited sterilizing facilities must be planned for other areas. The brochure also contains an extensive product catalog section and engineering data. An 8-page brochure, "Architects' Guide for Surgical Lighting" (AIA File 31-F-28), has also just been published by American Sterilizer Co., Erie 6, Pa.

Standardized Buildings are the subject of a new 28-page, illustrated brochure entitled, "Buildings by Luria" (AIA File 14-I), which presents a description of the company's new F buildings, their large span and clear span buildings and their standard door and window combinations and collateral structural materials. Luria Engineering Co., 511 Fifth Ave., New York 17, N. Y.

Reflective House Insulation. Alfol aluminum foil insulation is discussed in a 24-page reference manual which covers topics from the origins of reflective insulation through installation techniques and cost study data. The brochure contains more than 75 charts, photos and drawings. (AIA File 37-C-3.) Reflectal Corp., Suite 1748, 310 So. Michigan Ave., Chicago 4, Ill.*

Remote Air-Cooled Condensers are described in a 4-page bulletin, Bulletin AC-100, which includes tables of performance data and coil and fan data and also dimensions and weights. Halstead & Milchell, Bessemer Bldg., Piltsburgh 22, Pa.

Automatic Emergency Lighting. Light Warden units, designed to provide instant protection whenever the regular source of power fails, are described in 8-page Catalogue 10 from Electric Cord Co., 195 William St., New York 38.

Air Conditioning and Refrigeration Equipment is cataloged in Bulletin 80-D, which also includes a well-organized discussion of operating principles and useful tables. Frick Co., Waynesboro, Pa.*

Aluminum Acoustical Ceiling designed to be suspended from the walls of corridors not exceeding 8 ft in width are described in a 4-page illustrated brochure (AIA File 39b) from Simplex Ceiling Corp., 552 W. 52nd St., New York 19, N. Y.*

Folding Walls. Flexibility of space arrangement and versatility of function are used to illustrate the advantages of Fairhurst *Unitfold* and *Unitslide* folding walls in a 4-page brochure from *John T. Fairhurst Co., Inc., 45 W. 45th St., New York 36, N. Y.**

Store Fronts. A new catalog, Catalog M, of store front details presents cross sections in full, half and quarter size. They are printed on heavy translucent paper, so that the shapes can be traced in opposite directions by reversing the pages. National Store Fronts Co., Manchester St., Lawrence, Mass.

Air Conditioning and Refrigeration Controls. The complete line of these automatic controls, including late improvements and changes in the GC line, is cataloged by General Controls Co., Glendale, Calif.

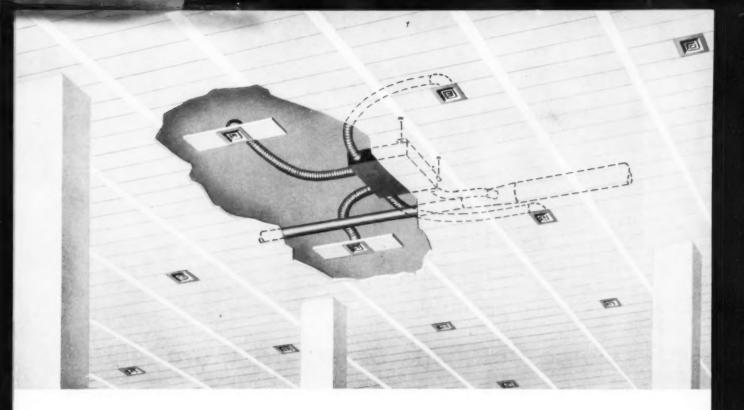
Roof Decks and Roof Insulation (AIA File 4-E-13 and 37-B-2) is the title of an illustrated 12-page brochure which covers the use of *Vermiculite* insulating concrete on roofs. A 4-page bulletin, "Zonolite Concrete for Modern, Insulated Bermuda Roofs" (AIA File 37-B-2), is also published by *Zonolite Co., 135 So. LaSalle St., Chicago 3, Ill.**

Central Built-in Cleaning System. The Vacu-Flo vacuum cleaning system, with a hose that plugs into room outlets from a central installation, is presented in a 4-page brochure from H-P Products, Inc., Vacu-Flo Div., Louisville, Ohio.

Asbestos Siding. "Advanced Design with Asbestos Siding" is the title of a booklet which presents original house designs, in which asbestos cement siding has been used, by six architects. Asbestos-Cement Products Assoc., 509 Madison Are., New York 22, N. Y.

* Other product information in Sweet's Architectural File, 1956.

(Continued on page 294)



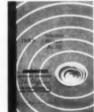
Here's flexible high velocity air diffusion

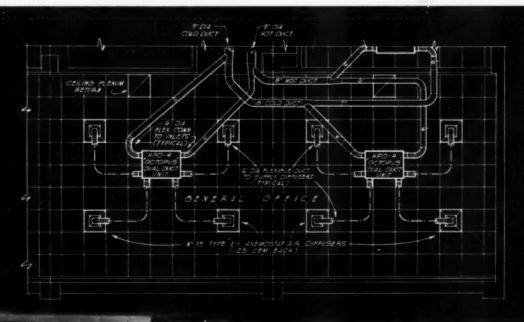
Here's how the new Anemostat Octopus unit works in interior zone air conditioning. High velocity air travels to a sound attenuator volume control unit, which has from two to four openings. The air is carried from these outlets through flexible hose to Anemostat diffusers. These have the same outer dimensions as the acoustical panels. If the space must be adjusted to meet changing conditions, such as subdivision of the occupied area, ceiling panels and diffusers can be quickly relocated by merely moving the flexible hose.

Air can be supplied to the Anemostat Octopus sound attenu-

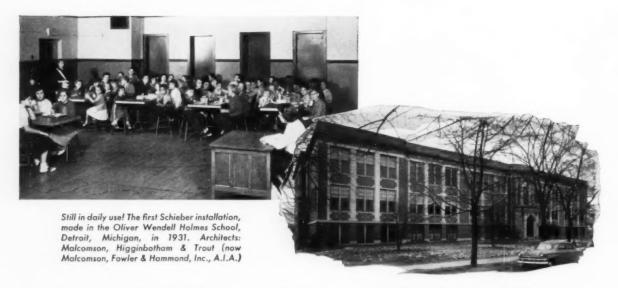
ators from a dual-duct system with a thermostat controlling one bay, or from a single-duct system with automatic or manual control.

Write on your business letterhead for Selection Manual 50 which gives full application and specification data on wide range line of Anemostat All-Air High Velocity units. Anemostat Corporation of America, 10 East 39th Street, New York 16, N. Y.





Diagrammatic illustration of office building showing Anemostat HPO-4 Dual-duct Units.



Some Buildings Grow Old Gracefully!



Recent Schieber installation, Lynnwood Junior High, near Edmonds, Wash. William Arild Johnson and Harry E. Botesch, architects and engineers.

Write to Schieber for specification data or consult Sweet's file

23i 5c. How well a building wears depends as much on the architect's and client's vision and aggressiveness as on sound engineering and construction. When Schieber introduced IN-WALL Folding Tables and Benches 25 years ago, the principle of multipleuse-of-space was new. Today it is considered in the planning of every school.

IN-WALL

PORT-A-FOLD

MOBIL-FOLD

TRANSI-FOLD

Schieber SALES COMPANY Detroit 39, Michigan

Representatives in all areas-U. S. & Canada



THERMAL INSULATION - 14: Floors

By Laurence Shuman, Consulting Engineer

U Factors for Above-Grade Floors

Legend:	Type of Floor	A	В	C	D	E	F	G	H	1	J	K	L	M	N
Type of Insulation or Ceiling under Wood Floor, or Ceiling suspended	13/6"hardwood flooring	.39	.24	.24	.23	.23	.19	.18	.15	.14	.09	.06	.08	.06	.05
at Least 7½ in. under Concrete	13%" hardwood flooring and 25% yel-														
110011	low pine subflooring													.06	
A Floor only, no insulation	Bare concrete, 3" thick	.53	.29	.29	.28	.27	.21	.21	.16	.16	.10	.06	.08	.06	.05
B Metal lath and plaster	6" thick	.47	.27	.27	.26	.26	.20	.20	.16	.15	.09	.06	.08	.06	.05
C %" gypsum board	10" thick	.41	.25	.25	.24	.24	.19	.19	.15	.15	.09	.06	.08	.06	.05
D Gypsum or wood lath and 1/2"	Tile or terrazzo on concrete, 3" thick	.51	.29	.28	.27	.27	.21	.20	.16	.16	.10	.06	.08	.06	.05
E 36" plywood	6" thick	.45	.27	.26	.26	.25	.20	.19	.15	.15	.09	.06	.08	.06	.05
F 1/2" rigid insulation board	10" thick	.40	.24	.24	.24	.23	.19	.18	.15	.15	.09	.06	.08	.06	.05
G ½ "rigid insulation board, plastered	Parquet flooring on concrete, 3" thick	.38	.24	.23	.23	.22	.18	.18	.14	.14	.09	.06	.08	.06	.04
H 1" rigid insulation board	6" thick													.06	
1 1" rigid insulation board, plastered	10" thick												-		
J 2" flexible insulation		.31	.21	.21	.20	.20	.17	.10	.13	.13	.09	.06	.08	.06	.04
K 3%" flexible insulation	Hardwood flooring and yellow pine														
L 1 sheet reflective aluminum, 1 air space	subflooring on sleepers on con-														
M 2 sheets reflective aluminum, 2 air	crete, 3" thick													.05	
spaces	6" thick	.21	.16	.16	.15	.15	.13	.13	.11	.11	.07	.05	.07	.05	.04
N 3 sheets reflective aluminum, 3 air	10" thick	.20	.15	.15	.15	.14	.13	.12	.11	.11	.07	.05	.07	.05	.04

Insulation of On-Grade Concrete Slabs

Heat transfer through concrete floor slabs on the ground is dependent on: (1) the difference in temperature between the air outside the structure and the air within the structure, (2) the floor material and (3) the conductivity of the surrounding earth. While data concerning the conductivity of the ground are not ordinarily available, tests indicate that where the area of the slab floor is on the order of 6 to 12 times its perimeter, the heat loss may be calculated proportionally to the exposed edge of the floor slab. For buildings of greater area, where the ratio of area to perimeter is much over 12 to 1, the heat loss should be determined proportionally to the area.

Tests show that the heat loss from uninsulated concrete floors laid on

the ground is about 0.81 Btu per hr per lineal ft per degree temperature difference between the air on the warm side and the air on the cold side of the building. Recommendations of the Building Research Advisory Board for insulation of the perimeter of such slab floors give the amount of perimeter insulation deemed necessary to reduce the edge heat loss to satisfactory limits. The Federal Housing Administration lists these limits in the MPR Revision No. 54, August 1955.

When the building area is greater than 12 times the perimeter, the heat loss from slab floors at grade should be calculated at approximately 0.10 Btu per hr, per sq ft of floor, per degree F temperature difference between inside and outside air. Heat loss of basement walls

below grade usually is calculated at twice this rate or 0.20 Btu / hr / sq ft / F. However, where specific rooms are located along the outside of the structure, it is recommended that their heat loss be calculated using the perimeter method to find the floor loss of the room.

Perimeter insulation must be noncapillary; not permanently harmed by wetting, or by contact with wet concrete mix; not subject to damage by fungi or termites; and must have a resistance to compression such that the reduction in thickness under a uniform loading of 50 lb per sq ft shall not exceed 10 per cent of its initial thickness; and the additional reduction in thickness under a uniform loading of 90 lb per sq ft shall not exceed 6 per cent of that measured under the 50 lb loading.

IS industrial Side Reflectors hinge downward and may be completely removed for ease of maintenance. 6000 SERIES 25% Indirect The New Curtis "Six Thousand" series is designed for Eye-Comfort® in industrial locations. The Luminaires illuminate the ceiling with an indirect component of 25% of the light output. Crosswise shielding of 35° is provided for the 75% 75% Direct direct component. The lighting units in this versatile line are available with Alzak Light distribution elim-Aluminum, Porcelain Enamel, or baked inates severe brightness contrast and tunnel white "Fluracite" enameled steel removlighting conditions. able side reflectors. Low cost efficient maintenance is provided by having side panels readily removable for cleaning. In addition there are no horizontal diffusing or reflecting surfaces to collect dust. There is a unit in this versatile line to accommodate all 4', 5' and 8' fluorescent lamps. The Curtis "Six-Thousand" series brings Appropriate Brightness Control Lighting to industrial areas. Mail coupon Louvers available where greater for FREE descriptive literature. lengthwise shielding is desired. CURTIS LIGHTING, INC. Dept. B3-20 6135 West 65th Street Chicago 38, Illinois

Curtis "Tong Hangers" facilitate and cut installation cost as they allow flexibility in placement of hangers and permit bypassing of building construction obstacles such as beams, sprinkler heads, etc.

*Pat. applied for

Name_ Compony Address State

In Canada: Curtis Lighting of Canada, Ltd. 195 Wickstead Ave., Leaside, Toronto 17, Ont., Canada

THERMAL INSULATION - 15: Concrete Floor Slabs

By Laurence Shuman, Consulting Engineer

TABLE 1: PERIMETER INSULATION FOR VARIOUS DESIGN TEMPERATURES

Maximum Conductance (C)
(Btu/hr/sq ft/deg, F)
for Various Widths of Insulation

			- w	-		
Outside	Total V	Vidth o	Insul	ation (s	ee sket	ches)
Design	Unhea	ted Flor	or Slab	Heat	d Floor	Slab
Temp., F	2 ft	11/2 ft	1 ft	2 ft	1 3/2 ft	1 ft
- 30 and lower	0.15	_	_	-	0.30	0.20
- 20 to - 29	0.20	_	-	0.40	_	0.30
- 10 to - 19	0.20	-	-	_	_	0.40
0 to - 9	0.30	0.20	0.15	-	_	0.40
+ 1 to + 10	0.40	0.30	0.20	_	_	0.40
11 to 20	_	_	0.40	Vertico	l edge	only
21 to 30	Vertica	al edge	only	Vertico	al edge	only
31 and above	None	required	i	None r	equired	
Summer Air	Uncco	led slab	0.40	Cooled	slab	0.40
Conditioning						

TABLE 2A: PERIMETER LOSS OF UNHEATED SLABS

****	lifferen utside o					
Total Width of Insulation	_			C) of Ir		
1.0 ft	0.29	0.38	0.49	0.58	0.67	0.77
1.5	0.26	0.35	0.44	0.52	0.61	0.70
2.0	0.25	0.33	0.42	0.50	0.59	0.67

TABLE 2B: PERIMETER LOSS OF HEATED SLABS

Total	1		HEAT al ft/d inside	-		
Width of	1		0.25	-		0.40
1.0 ft	0.32	0.43	0.57	0.70	0.83	1.00
1.5	0.28	0.39	0.50	0.62	0.75	0.88
2.0	0.27	0.37	0.48	0.59	0.71	0.83

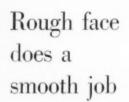
I FOOT VERTICAL B HORIZONTAL INSULATION.

1.5 FEET VERTICAL B HORIZONTAL INSULATION.

When the perimeter method of calculation is followed, the Federal Housing Administration requires the thermal value and width of perimeter insulation to be as given in Table 1, above. The term "heated floor slab" means any installation such as a radiant floor panel, warm air perimeter loop, or warm air perimeter radial system where heating pipes or ducts are installed in or under the concrete slab. The conductivity of the insulation at the slab perimeter must not exceed the figures in the tables.

TABLE 3: CONVERSION FACTORS FOR

	CONDUCTANCE (C)							
	Thickn	ess of	insulatio	on, in.				
vity (K)	2	21/2	1	34				
2	0.1	0.13	0.2	0.27				
25	0.13	0.17	0.25	0.33				
3	0.15	0.20	0.3	0.4				
3.5	0.18	0.23	0.35	0.47				
6	0.2	0.27	0.4	0.53				
	2 25 3 3.5 4	Thickn 2 2 0.1 0.13 3 0.15 0.18	Thickness of 2 2½ 2 0.1 0.13 25 0.13 0.17 3 0.15 0.20 3.5 0.18 0.23	Thickness of insulation 2 2½ 1 2 2½ 1 2 0.1 0.13 0.2 25 0.13 0.17 0.25 3 0.15 0.20 0.3 35 0.18 0.23 0.35				



Particularly appropriate to
distinguished contemporary design
is the use of rough-face redwood siding
for exterior and interior.
By specifying "resawn face,"
the architect can obtain
a pleasing surface texture
with superior stain retention.
"Resawn face" is standard in plain
shiplap pattern sketched above.

California Redwood

CALIFORNIA REDWOOD ASSOCIATION
576 SACRAMENTO STREET
SAN FRANCISCO 11, CALIFORNIA

THERMAL INSULATION - 16: U Factors for Glass; Wood Doors

By Laurence Shuman, Consulting Engineer

These tables reprinted by permission from Heating Ventilating and Air Conditioning Guide 1955, Chapt. 9, page 195

HEAT TRANSMISSION COEFFICIENTS FOR WINDOWS, SKYLIGHTS AND GLASS BLOCK WALLS

(Btu / hr / sq ft / degree F difference in temperature, air to air, inside and outside building)

Vertical glass sheets

NUMBER OF SHEETS	ONE		TWO			THREE	
Air space, in.	None	1/4	1/2	1	1/4	1/2	1
U	1.13	0.61	0.55	0.53	0.41	0.36	0.34

Horizontal glass sheets

NUMBER OF SHEETS	HEAT FLOW UP				
NUMBER OF SHEETS	ONE		TWO		
Air space, in.	None	34	1/2	1	
U	1.40	0.70	0.66	0.63	

Hollow glass block walls

DESCRIPTION	OUTDOOR EXPOSURE
5% x 5% x 3% in. thick	0.60
7% x 7% x 3% in, thick	0.56
1134 x 1134 x 33/4 in. thick	0.52
7% x 7% x 3% in. thick, with fiber glass screen dividing cavity	0.48

Application factors for windows: multiply flat glass U values by these factors

WINDOW DESCRIPTION	SINGLE GLASS	DOUBLE GLASS	WINDOWS WITH STORM SASH
Sheets	100% glass, 1.00	100% glass, 1.00	
Wood sash	80% glass, 0.90	80% glass, 0.95	80% glass, 0.90
Wood sash	60% glass, 0.80	60% glass, 0.85	60% glass, 0.80
Steel sash	80% glass, 1.00	80% glass, 1.20	80% glass, 1.00
Aluminum sash	80% glass, 1.10	80% glass, 1.30	80% glass, 1.10

HEAT TRANSMISSION COEFFICIENTS OF SOLID WOOD DOORS

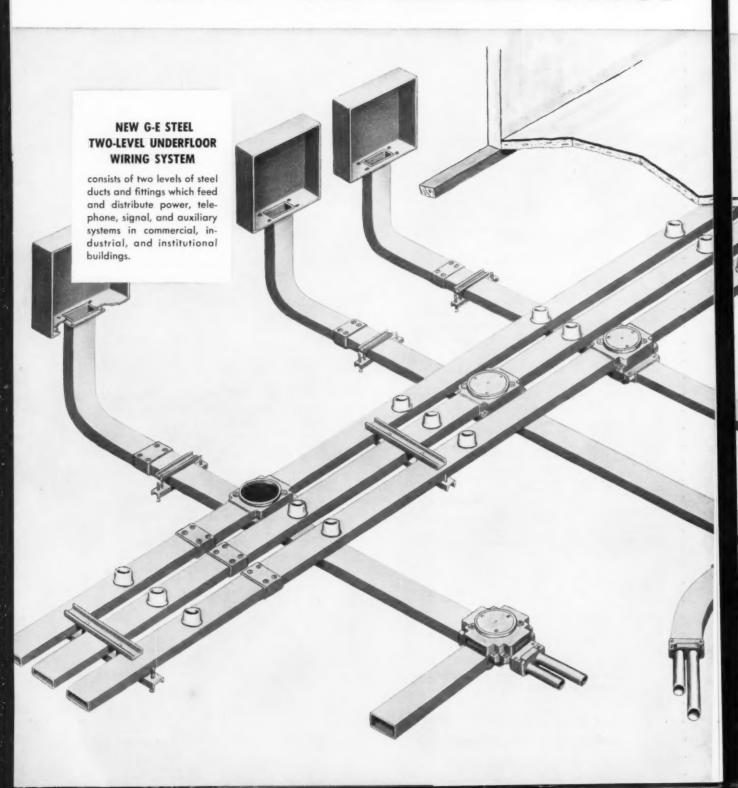
(Btu / hr / sq ft / degree F difference in temperature inside and outside the door at 15 mph wind velocity outside)

NOMINAL DOOR THICKNESS	ACTUAL THICKNESS	EXPOSED DOOR	DOOR WITH GLASS STORM DOOR
1	25/20	0.69	0.35
11/4	13/6	0.59	0.32
11/2	15/6	0.52	0.30
13/4	13%	0.51	0.30
2	15%	0.46	0.28
21/2	21/8	0.38	0.25
3	25/8	0.33	0.23

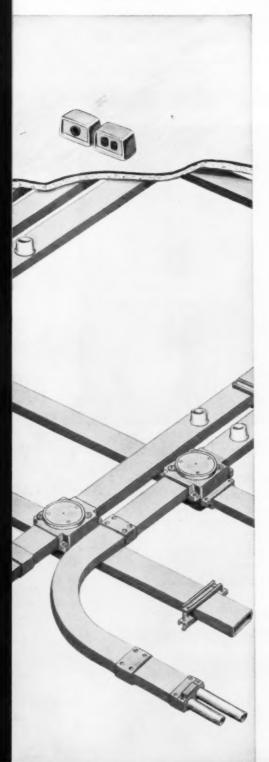
A value of 0.85 should be used for single exposed doors containing thin wood panels or single panes of glass, and a value of 0.39 for the same door if protected by glass starm doors.

General Electric Announces

New TWO-LEVEL steel



underfloor wiring system



- gives completely separate services
- permits unlimited number of duct feeds
- fits any predetermined floor layout
- allows unlimited number of services

A new two-level steel underfloor wiring system offering entirely new benefits to architects, engineers, electrical contractors, owners, and tenants has been announced by General Electric.

COMPLETE SEPARATION OF SERVICES because only single-duct junction boxes are used. Duct entrances are on two levels—usually with feeder duct below and distribution duct above. This separation allows unobstructed runs and permits conductors to be pulled straight through the boxes. No crossunders or crossovers are necessary in the new G-E two-level system.

FLEXIBILITY IN LAYOUT AND DESIGN is now possible because there are no limitations to the duct pattern in either the feeding or distribution portions of the two-level system.

ONLY ONE TYPE AND SIZE JUNCTION BOX TO INSTALL—contains no tunnels or barriers. Its entire interior is accessible for work and inspection. Wire pulling is easier and circuits are easy to trace because of two-level separation of all services.

INCREASED WIRING CAPACITY is provided for by the new steel duct (4-square inches cross-sectional area).

FIND OUT how this two-level system can help you distribute power, telephone, signal, and auxiliary systems. Get in touch with your nearest G-E Construction Materials District Office or write for information bulletin to Section C59-25, General Electric Company, Bridgeport 2, Connecticut.

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CONDUIT PRODUCTS DEPARTMENT

TECHNICAL ROUNDUP

(Continued from page 226)

MODEL "PLANT OF FUTURE" IS DESIGNED BY CHICAGO FIRM

The "Factory of the Future"—an eighth-inch scale model of a hypothetical, pushbutton manufacturing plant that will operate on solar and nuclear power in the year 2005—was exhibited at the Pageant of Industrial Progress in Chicago last November by A. Epstein & Sons, Inc., Architects and Engineers, of Chicago. The plant incorporates all the features which Mr. Epstein envisions as those of a plant which may be operating in Chicago's Central Manufacturing District 50 years from now.

It will be equipped with its own power plant: rotating sun accumulators on the roof of the superstructure, as shown in the photograph of the model above. In the compartments of the superstructure will be atomic battery rooms for the storage of energy for evenings and days of inclement weather.

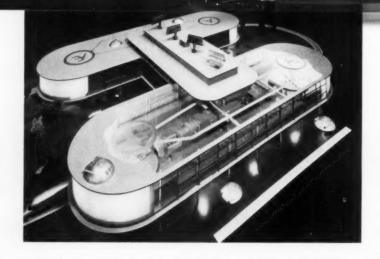
Walls will be of pre-formed plastic panels which will admit sunlight during the day and will be electronically charged to emit light at night. Infra-red radiation from the walls will be thermostatically controlled for temperature gradation.

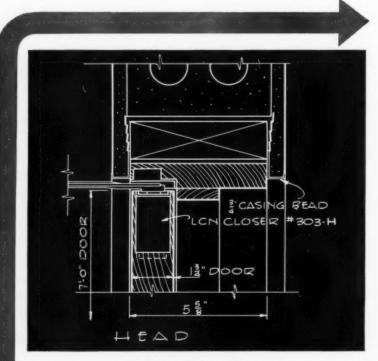
The plant will be composed of two production lines with office facilities located centrally between them. Although there are locker and toilet facilities in the central section, there is no provision for an employes' lunchroom. By 2005, Mr. Epstein maintains, the 8-hr working day will have shrunk to 4 or 5 hr, so the lunch hour will be a thing of the past.

There is no storage space for either raw materials or finished products, since the efficiency of the pushbutton plant depends on its continuous operation. Raw materials will be delivered by "helio-trucks" and unloaded into the plant via automatic conveyors, operating through doors in the plant similar to bomb-bay doors in planes. They will then be carried to the turntable at the beginning of the production line on the second level.

The largest staffed departments of the plant will be the engineering and administrative sections. The maintenance staff can be kept to a minimum because the construction will be primarily of plastic, aluminum and other non-oxidizing treated ferrous metals. Furthermore, all surfaces will be given negative static charges, and positive charged air ducts located throughout the plant will pick up and transport dust to atomic disposal units.

(Continued on page 243)





CONSTRUCTION DETAILS

for LCN Closer Concealed-in-Door Shown on Opposite Page The LCN Series 302-303 Closer's Main Points:

- 1. An ideal closer for many interior wood doors
- Mechanism concealed within door; flat arm not prominent, and provides high closing power
- 3. Door is hung on regular butts
- 4. Closer is simple to install and to adjust
- 5. Used with wood doors; wood or metal frames
- 6. Practically concealed control at little more than exposed closer cost

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LCN CLOSERS, INC., PRINCETON, ILLINOIS



LCN CLOSERS, INC., PRINCETON, ILLINOIS

Construction Details on Opposite Page

THESE ARCHITECTS FOLLOWED THEIR OWN



Offices of Harold Spitznagel, Sioux Falls, S. D.



Thermopane INSULATING GLASS

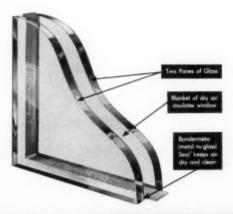
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Offices of Sanzenbacher, Miller & Brigham, consulting engineers; Chas. D. Scott, arch., Toledo, O.



Offices of A. Epstein & Sons, Chicago, III.

Thermopane FACTS

Much technical data is available to help the architect and engineer design for most effective and most economical use of *Thermopane*. This data is thoroughly presented in our *Thermopane* Manual, which will be sent on request. (See coupon below.)

The following brief data are excerpts from the Manual:

ADVANTAGES OF THERMOPANE

- 1. Savings in fuel
- 2. Increased usable room space
- 3. Reduction of condensation
- Reduced air-conditioning initial equipment needs and operating costs
- 5. Quieter interiors

INSULATING EFFICIENCY

Thermopane with $\frac{1}{4}$ " air space—U = .65 Thermopane with $\frac{1}{2}$ " air space—U = .58 —as compared with 1.15 for single glass.

KINDS OF GLASS

Thermopane may be made with sheet glass for economy, in units $\frac{1}{2}''$ thick, or in plate glass for the ultimate in clarity. Units with $\frac{1}{2}''$ plate are $\frac{1}{2}''$ thick; units with $\frac{1}{2}''$ plate are 1" thick. Thermopane can also be made with Heat Absorbing Glass, Tuf-flex* tempered plate glass, or several types of Blue Ridge Patterned Glass.

STANDARD SIZES

More than 90 standard sizes are made to permit economy in use with most popular types of sash. The *Thermopane* Manual provides a list of sash types and standard sizes for them.

OTHER DATA IN THERMOPANE MANUAL

Heat Loss Data Warm Side Surface Temperatures Condensation Points Sound Insulation Light and Solar Radiation Transmittance Reduction of Cooling Load

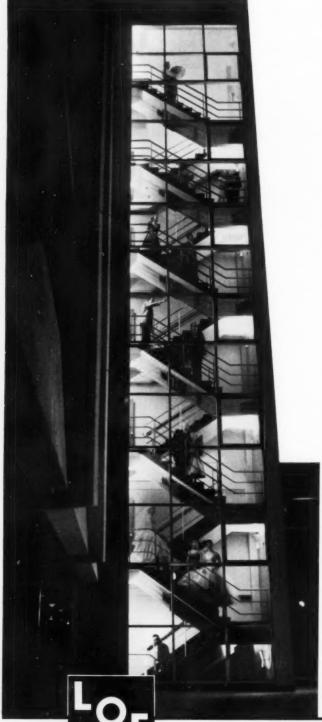
Strength of Thermopane
Wind Load
Weight per sq. ft.
Glazing Instructions
Framing details
Suggested specifications

Thermopane is sold by local L·O·F Glass Distributors and Dealers, listed under "Glass" in yellow pages of phone books.



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new freedom
from distortion...
looking in,
looking out,
looking at

For a clear and undistorted view inside or out, you need Parallel-O-Plate* Glass. This staircase with its railing sharp and unwavering is a good example.

To assure maximum clarity in store-fronts, display cases, windows, mirrors — for looking in, looking out or looking at — be sure you get Parallel-O-Plate. It's the only twin-ground plate glass made in America, yet costs no more than ordinary plate glass in most localities.

Read in the column at the right why it is better glass for you.

El Cortez Hotel, San Diego, Architect: George R. Wheeler, San Diego

LASS PARALLEL O PLAT

PARALLEL · O · PLATE GLASS

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FACTS



COMPARE the reflections of the upsidedown signs in the mirror of conventional plate glass (left) and the mirror of Parallel-O-Plate* (right).

Parallel-O-Plate Glass is more distortion-free than ordinary plate glass because its surfaces are more parallel.

This great degree of parallelism is the result of a special kind of grinding called *twin-grinding*.

The ordinary method is to cut off a section of glass, grind one side, turn it over and grind the other side.

In the twin-grinding process, the glass moves from the furnace through the new annealing lehr and into the twin-grinding process where both sides are ground simultaneously in a continuous ribbon 975 feet long. It's precision made all the way.

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a Great Name in Glass

TECHNICAL ROUNDUP

(Continued from page 238)

EXTRA LIFT SLAB PROVIDES FOR VERTICAL EXPANSION

Provision for future expansion — vertical expansion — has been made in the new office building and warehouse of Lift-Slab, Inc., in San Antonio, Tex. An "extra" slab was poured at the time of construction and is being held "in reserve" until it is needed.



In the opinion of the owners, the office and administrative space required at the time of building will be almost double within perhaps two years. Since both architect O'Neil Ford and the owners considered that vertical expansion would be much more economical and more advantageous from the standpoint of land space, it was decided that the lift-slab technique would be the most practical method of construction.

By casting the second floor at the same time as the roof and first floor, the following economies were realized: (1) With the second floor and roof separated by 5 in, in the final positioning of the slabs, additional insulation was gained, and the second floor was in place for future expansion, thus saving time, forming and pouring of concrete. (2) When the second floor is needed, the existing roof slab will merely be lifted an additional 8 ft and refastened to the columns. Thus, no roofing has to be removed for the addition of another story. The process of lifting the slab will be simple, since it is now resting only on weld blocks and is not rigidly attached to the columns. The second floor will be ready for partitioning immediately after the roof is lifted without interfering with operations in the first-floor offices.

According to the owners, this planned vertical expansion amounts to an investment in the second floor of about \$3000, which will be nonproductive until the expansion actually takes place. However, without this scheme, a future floor would cost approximately \$6000.

Textbook of Structural Shop Drafting, Vol. 3, covers complicated details of trusses and girders, both riveted and welded. 218 pp. \$3. American Institute of Steel Construction, 101 Park Ave., New York 17. (Continued on page 248)



When a mason uses reinforcing in a masonry wall, he lays the reinforcing on the last course like this With ordinary reinforcing, all the wires are butt-welded This allows the side bars to rest right on the blocks. Then the mason puts on his mortar. Steel doesn't float so, obviously, the mortar can't get under side bars. So the mortar is only bonded to the top and sides. With Wal-Lok, the Tie Rods are welded across the Bars. The mason puts Wal-Lok in the wall with the Tie Rods DOWN This holds the away from the blocks, and the mortar completely surrounds each Side Bar With Wal-Lok, the mortar grips all the way around! When you try to hang onto a rod, you don't hold it with your finger tips hold it in your fist with your fingers wrapped all the way around. Why expect mortar to do something you can't do? All Wal-Lok is also deformed HIIIIIIII and knurled for a positive bond the full length. The value of any reinforcing depends entirely on its bond to the mortar.

All this while holding an overall thickness of 7/32".



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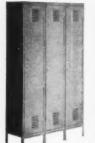
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traffic areas where beauty and styling must appear. The design lends itself to use with brass, copper or stainless steel feature strips. Write to Architect's Service Department, Congoleum-Nairn Inc., Kearny, N. J. for information and samples.

SPECIFICATIONS: Install over on-grade concrete, suspended wood or suspended concrete.

"Venetian"—5 colors—1/8"

"Sequin" - 19 colors - 1/8" and .080"
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All $\frac{1}{6}$ " tile available in 9"x 9", 12" x 12" and 18" x 18". The .080" tile offered in 9" x 9" only.

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CONGOLEUM-NAIRN Inc., Kearny, N. J. Copr. 1956





MILE HIGH: 23-story Tower Building of new Mile High Center, Denver.



SEA LEVEL: new 34th Street Office Building, New York City-26 stories high.

American Blower products assure ideal comfort conditions a mile high and at sea level

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New 34th Street Office Building, Architects: Rene Brugnoni and Rudolf C. P. Boehler, General Contractor: Webb & Knapp Construction Corp. Mechanical Contractors: Kerby Saunders, Inc. Consulting Engineers: W. R. Cosentini & Assoc.

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First Prize \$10,000
Second Prize 5,000
Third Prize 2,500
Honorable Mention (15) 500

If you have been following the exciting development of curtain walls for modern buildings, you may have some brilliant ideas of your own ready for the drawing board. Alcoa and the National Association of Architectural Metal Manufacturers are interested in those ideas.

You are invited to develop your ideas into plans for a hypothetical building enclosed by aluminum curtain walls. Entries will be judged on the basis of excellence of design and the ingenuity and practicality of construction methods.

The competition is open to architects, architectural draftsmen and

students of architecture residing in continental United States or Canada. Contestants may obtain programs by writing Mr. Paul Schell, A. I. A., in care of National Association of Architectural Metal Manufacturers, 228 North LaSalle Street, Chicago 1, Illinois. Contest closes at midnight March 26, 1956.

The first three prize winners will be guests of the co-sponsors at the annual convention of the NAAMM on April 16, 1956, at Belleair, Florida, where prizes will be awarded.

If you wish to enter this competition, kindly use the coupon below. Employees, office associates, families of the jury, the professional adviser, employees of Aluminum Company of America, or National Association of Architectural Metal Manufacturers are ineligible for this competition.

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Fire-Snuf panels are molded in standard building corrugations and flat sheets or panes, in lengths up to 13 feet and widths up to 42 inches. They are available in Fire-Snuf Green and Fire-Snuf Blue, colors which painstaking investigations have proved to be scientifically correct for best working conditions and optimum light diffusion. They may also be ordered in Semi-Clear where highest possible light transmission is desired.

Fire-Snuf retains all features of standard Resolite panels—shatterproof safety, high strength, translucence, stability and load bearing characteristics.

For additional information on Fire-Snuf consult your nearest Resolite distributor or contact:



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Office and Warehouse, CHICAGO, ILL.

Export Office, HOUSTON, TEXAS

Distributors in principal cities, U. S. and Canada



TECHNICAL ROUNDUP

(Continued from page 243)

Building Code Administration, Approval of building materials, methods, systems and equipment by principal administrative building officials, without prior legislative approval by city councils and town and village boards, is possible in many cities today, thus overcoming the rigidity of conventional specification-type building codes. Drawn from a survey covering 70 cities in 26 states made by Norbert H. Brown of the New York State Building Code Commission, these conclusions show that in 80 per cent of the municipalities covered it is not necessary to hold public hearings on approvals. In 20 per cent of the municipalities it is still necessary to amend the local code by legislative action to permit the use of a new material, method, system or equipment.

This improvement in procedure has resulted from a general acceptance of the philosophy of a "performance-type" code, the major advantage of which is the authority of administrative officials to accept materials which stand up under performance criteria without requiring recourse to the cumbersome procedure of legislative approval with the delays and expenses of public hearings. These legislative procedures have been blamed for discouraging designers, builders and manufacturers from developing better and less costly building methods and materials.

Results of the survey show also that few cities still require that tests be conducted under the direct supervision of the local building department or board of appeals. Nearly all approval agencies today will accept at face value data supplied by accredited laboratories.

New York State Building Code applicable to general building construction has been promulgated, thus making available to all municipalities of the state a complete building code. These regulations, applicable to business, mercantile, industrial, storage, assembly, institutional and miscellaneous nonresidential occupancies and uses, complement those previously promulgated which are applicable to one- and twofamily and multiple dwellings. According to a survey by the New York State Building Code Commission, approximately 40 per cent of all municipalities in New York State having building regulations were operating under the State Building Construction Code.

(Continued on page 252)

New Statler Hotels Leakproofed With "THIOKOL" Based Caulking Compound

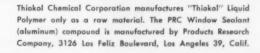
The modern window wall construction of the Statler-Hilton Hotels at Dallas, Texas, and Hartford, Connecticut demanded a caulking compound capable of leakproofing this type of structure.

For sealing the aluminum window frame to the concrete opening, a "Thiokol"based compound manufactured by Products Research Company, PR-340, was chosen.

"Thiokol" liquid polymer, the basic ingredient of this compound is a solvent-less liquid that converts at ordinary temperatures to a resilient rubber. It insures a tenacious, durable seal even after years of weathering... and maintains resilience and adhesion at temperatures ranging from 250° above to 65° below zero.

To insure leakproof construction, take advantage of "Thiokol"-based glazing and caulking compounds. Information will be sent to you on request. WRITE: THIOKOL CHEMICAL CORPORATION, 784 North Clinton Avenue, Trenton 7, New Jersey. IN CANADA: Naugatuck Chemicals Division, Dominion Rubber Company, Elmira, Ontario.







Thiokol

PIONEER MANUFACTURERS OF SYNTHETIC RUBBER

for dependability, accuracy, quality...

specify St. Charles

HOSPITAL CASEWORK

Central sterile supply room.

Gratiot Community Hospital, Alma, Mich.; Clark R. Ackley, Architect.







Wardrobe in a patient's room.



Nurses' station; Arthur B. Allaben, Administrator, shown at right.

From coast to coast, more and more hospitals every day are being equipped with St. Charles casework. Like the beautiful new Gratiot Community Hospital, pictured here, these hospitals and their architects looked to St. Charles for quality, durability and economy in casework.

At St. Charles, highly skilled personnel, employing their 20-year backlog of experience in the nation's newest and most modern casework construction plant, are prepared to be of assistance to you in every possible way. Without cost or obligation, we offer a complete design and layout service . . . and, of course, full information on our many special units and accessories. Your inquiry will be answered promptly.

A request on your letterhead will bring our 40-page catalog, "St. Charles Hospital Casework."



casework sinks and counters special purpose units

ST. CHARLES MANUFACTURING COMPANY, DEPT. AR, ST. CHARLES, ILLINOIS

POWEK5

NEW Hydroguard

Best Insurance for SAFE, Comfortable Showers!





More Convenient for Bathers

HYDROGUARD installations are uncluttered with various valves. Because it has a built-in shut-off valve none is required between it and the shower head. HYDROGUARD is often used with shower heads having built-in volume control. For shower and tub control it is used with diverter spout as shown above.



New Triple Duty STRAINER-CHECK-STOPS concealed behind the HYDROGUARD cover, simplify piping and tile work. Walls are unmarred by protruding knobs or valve handles. With only one dial to turn instead of the usual 2 to 4 valves, there is no confusion on the part of the bather.



Don't skimp on Safety in Showers Get POWERS SAFE SHOWER SYSTEMS data. Call your nearest Powers office

(c53a) @ Reg. U. S. Pat. Off.



HYDROGUARD introduces an advanced style trend in shower control. It provides greater convenience for bathers and neater appearance. It is available for concealed piping (above) and for exposed piping.

Dynamic New Design Simplifies Shower Installation

Powers HYDROGUARD is Thermostatic. It is the finest shower control money can buy. It always maintains the shower temperature wherever the bather sets it . . . regardless of temperature or pressure changes in water supply.

Thermostatic SAFETY LIMIT Protects Bather from Scalding. It prevents flow of water to shower above 110°F. Should cold water supply fail Hydroguard instantly and completely shuts off hot water.

Conserves Water formerly wasted while adjusting various valves before bathing and jumping in and out of shower because of temperature changes.

Consult Powers on Shower Planning. Call our nearest office for data on Powers Safe Shower Systems. An experienced Powers engineer will gladly help you select the best shower controls for your requirements.

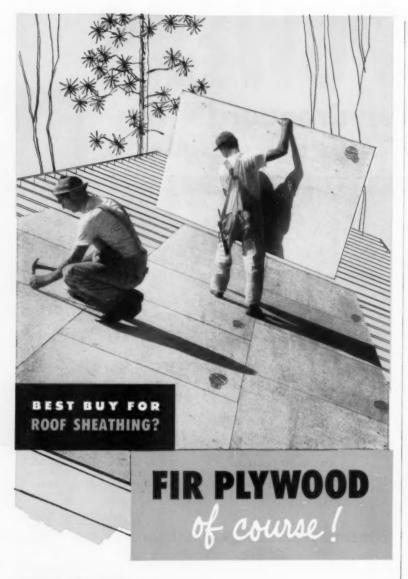


For further information See SWEET'S Catalog-

THE POWERS REGULATOR COMPANY

SKOKIE, ILLINOIS Offices in chief cities in U.S.A., Canada and Mexico

65 Years of Leadership in Water Temperature Control



here's why...

- Lower in-place costs (saves up to \$2.50 per square)
- ->>> 25% faster application
- Scrips nails firmly—will not pull loose in high winds
- ->>> Strong; braces building
- >>> %" panels on 24" centers meets FHA requirements
- >>> Dry! Won't shrink or swell
- >>> Ideal base for shingle, composition or built up roofing
- ->>> Far less waste, fewer nails



TECHNICAL ROUNDUP

(Continued from page 248)

Air Conditioning Preview. The air conditioning industry will enjoy its seventh consecutive record-breaking year in 1956, predicted Cloud Wampler, president of Carrier Corp., with a total retail volume of about \$3.2 billion, as compared with estimated total retail sales in 1955 of \$2.9 billion. Mr. Wampler's further prediction in December that 1956 will be the year of "the great breakthrough" in residential air conditioning was crystallized last month in the signing of the largest single order ever made for residential air conditioning by Mr. Wampler and William J. Levitt, president of the community building firm of Levitt & Sons, Inc. The agreement provides for the installation of Weathermaker central air conditioning systems in 702 Country Clubber homes being built in Levittown, Pa. The three-bedroom, unfinished-attic homes will sell for \$18,990. Mr. Wampler viewed this large-scale move to air conditioning as a trend that would have such an effect that "a house - old or new - no longer can be considered fully modern without air conditioning."

Residential Use of Electricity. George Bain Cummings, A.I.A. president, will be among several spokesmen from business, industry and the professions who will appear on a closed circuit telecast at 2 p.m. EST on Wednesday, February 8, built around the theme, "Live Better... Electrically." The telecast will be shown at simultaneous meetings to be held in more than 80 cities across the country which will be launched by some 70 electric utility companies to increase the residential use of electricity.

Prototype Packaged Boiler for Navy. A 12,500 lb per hr packaged water tube boiler designed primarily for coal firing and also equipped to utilize oil and gas will be installed at the Klamath Falls Air Force Base, Klamath Falls, Oregon. This new boiler is the prototype of a standardized design for future Navy shore installation requiring capacities from 10,000 to 25,000 lb of steam per hr. Culminating a program directed by Leroy F. Deming, chief of the Power Generating Section of the Bureau of Yards and Docks, the unit is designed to reduce the Navy's cost of coal-fired steam generating equipment. Constructed by Superior Combustion Industries, Inc., it is expected to result in similar economies for industry. (Continued on page 256)

PREVENT "ATHEROSCLEROSIS" IN SUPPLY AND DRAINAGE SYSTEMS

How Mueller Brass Co. Streamline:
copper tube and solder-type fittings insure
rust-proof, corrosion-proof, clog resistant systems

That the clogging of the human blood lines called "atherosclerosis" has its counterpart in the clogging of caulked-and-threaded plumbing systems is evidenced by this excerpt from a recent Associated Press dispatch...

* . . these heart arteries, along with others in the body, are susceptible to a clogging and narrowing process. Deposits of fatty material can form inside the artery wall, narrowing and impeding the blood flow, much like rust collecting inside iron pipes. This process is called "atherosclerosis", and is a form of hardening of the arteries.

In plumbing systems, you can avoid a condition similar to "atherosclerosis" by specifying Streamline copper tube and solder-type fittings for both supply and drainage. They won't clog, corrode, or leak, and their smooth-walled interiors insure a free-flowing system all the time. Mueller Brass Co. copper tube and fittings make a modern, attractive installation, and will ordinarily outlast the structure in which they are installed. Remember, too, that the compact stack goes into a standard 2" x 4" partition, without need for furring . . . an important consideration in cutting installation costs and obtaining more useable space in the home. Both you and your client will benefit if you specify Streamline . . . and eliminate the danger of "atherosclerosis" in the system.



A typical Streamline installation. The bronze fittings shown include a sanitary tee with 45° side inlet, a ¼ bend 90°, an adjustable closet flange, a long turn T-Y, and a P-trap with cleanout.

168-A



MUELLER BRASS CO. PORT HURON 5, MICHIGAN

ON-THE-JOB PHOTOS SHOW



Easy to handle. TUFCOR arrives at job pre-cut to fit joist spacing. The lightweight sheets are a convenient size for handling and are easily welded to framing. Three men can place up to 10,000 sq. ft. of TUFCOR a day.



An immediate deck. TUFCOR clipped or welded in place offers a safe platform for trades working above and below the steel deck. The tough-tempered, deep-corrugated highstrength deck withstands construction loads.



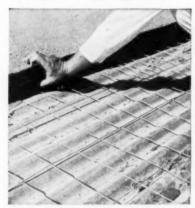
Insulation quickly placed. TUFCOR steel serves as a structural deck and forms a tight, solid base for insulating concrete fill. TUFCOR safely supports workmen and concrete buggies during roof construction.

TUFCOR® gives Westroads strong, lightweight roofs

Shop buildings of the Westroads Shopping Center in suburban St. Louis • Architects: Jamieson, Spearl, Hammond & Grolock, St. Louis, Mo. Structural Engineer: Milligan & Miklas, St. Louis, Mo. • General Contractor: I. E. Millstone Construction Co., St. Louis, Mo.



TUFCOR ADVANTAGES



Permanent cast-in-place slab. The lightweight insulating concrete fill forms a strong bond with the galvanized TUFCOR sheets. The result is a rigid permanent slab with low dead load and high insulating value.

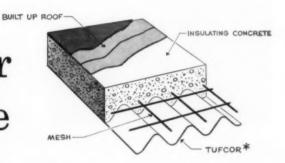


Perfect roofing base. TUFCOR deck and concrete slab offer a firm, inorganic, permanent base for the built-up roof. It is not necessary to apply roof immediately. Allow the concrete slab 5 to 10 days for curing.



Suspended plaster cellings in Westroads units show one satisfactory method of Tufcor ceiling treatment. Others: Tufcor's bright, galvanized surface can be left exposed for reflectivity or painted in harmonizing colors.

Shopping Center that are firesafe



*Available in 1¼" depth for 20, 22, 24 gage and ¾" depth for 26 gage, also known as Heavy Duty Corruform

Needing strong, lightweight roofs for two one-story buildings in St. Louis' new Westroads Shopping Center, both the architectural and structural engineering firms on the job chose 26-gage TUFCOR, a deep corrugated galvanized steel deck, as the perfect companion for steel joist construction and insulating concrete fill.

Says William A. Grolock, Architect, "We chose TUFCOR because it is economical to use for stores and commercial buildings where there are large areas to cover and where dead load is a factor. TUFCOR provides enough strength for normal construction loads and subsequent live and dead loads. The roof system is a good base for the 20-year bond roof we demand. Fire safety is another reason we chose the TUFCOR roof system."

Says Michael Miklas, Structural Engineer, "With the 3'-0" joist spacing, TUFCOR was an economical roof system. The system is adequate structurally and has a low dead load which permitted us to save on structural framing costs. The lightweight concrete fill used with TUFCOR provides good insulation and can be pitched easily for drainage. It is a good base for applying the built-up roof."

From the standpoint of economy, good roof design and

ease of erection, TUFCOR is an ideal decking for the cast-in-place insulating concrete fill. The lightweight roof system permits maximum economy in framing since total dead load of steel sheets, concrete and built-up roof is less than 16 pounds per sq. ft. For complete information, estimates or cost on your building plan, contact Granco home or district office, attention Dept. R-61.

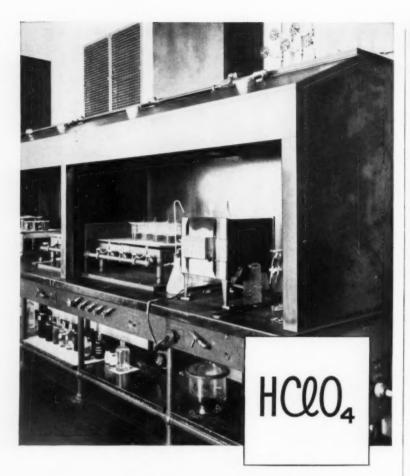


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For perchloric acid fume hoods,

Alberene Stone has a low absorbency factor of 0.15%. It's essentially nonstaining. Easily cleaned. And readily machined for tongue and groove, watertight construction.

Both of these features are absolutely essential for perchloric hoods — where thorough water flushing and removal is necessary to keep them deposit-free.

Further, with Alberene Stone — the natural silicate stone whose surface goes all the way thru — the all-silicate mineral components resist chemical attack.

Our engineers are ready to help you select or design perchloric hoods or other special-purpose hoods. Alberene Stone Corporation, 419 Fourth Avenue, New York 16, N. Y.

ALBERENE STONE

provides **LOW ABSORBENCY** protection

TECHNICAL ROUNDUP

(Continued from page 252)

Building Research Institute held its last major conference of 1955 on December 7-8 with the subject "Floor-Ceilings and Service Systems in Multi-Story Buildings." Architects, engineers, contractors, manufacturers and specialists in psychology took up the subjects of (1) Design for Environment; (2) The Service Systems (lighting, electrical, air conditioning); (3) Structural Design; and (4) Integration of Design and Construction. Michael Harris of Harrison & Abramovitz traced man's use of space from the beginning of time to the present and pointed out clients' need for flexible space on the one hand, and the increasing complexity and relative inflexibility of mechanical systems on the other. Perry Coke Smith of Voorhees, Walker, Smith & Smith described methods for producing an integrated design and stated that design procedure developed to a formal state stimulates rather than inhibits intuitive and inspired contributions.

Other principal speakers included Felix B. Graham of Syska and Hennessy, Inc., on electrical distribution; Carlton P. Roberts of Voorhees, Walker, Smith & Smith on air-conditioning; Frank J. Kornacker of Kornacker & Associates on structural design principles; and Robert B. Newman of Bolt, Beranek & Newman on sound control.

Porcelain Enamel and its importance in the appliance field was discussed at some length in three addresses presented at the annual meeting of the Porcelain Enamel Institute. Howard Ketcham, color and design engineer, spoke on "Color — The Vital Impact in Today's Sales." Laurence Wray, editor of Electrical Merchandising, discussed "Today's Appliance Picture." Marion Harper, president of the advertising firm of McCann-Erickson, Inc., talked on "The Appliance Industry — A Forward Look."

Applied Structural Design of Buildings, 2d E., by Thomas H. McKaig, contains simple, standardized procedures for solving structural design problems. It includes systems of construction, floor systems, fire ratings, simplified deflection tables, steel joists and metal deck, gypsum floor construction, composite beams, steel grillages and office practice. 416 pp. \$12.50. F. W. Dodge Corp., 119 West 40th St., New York 18, N. Y.



Sarco Condensate and Vacuum Pumps give you this big advantage...

UNDIVIDED RESPONSIBILITY

by Sarco for pumps as well as heating specialties!

Now Sarco expands its extensive heating line...by adding condensate and vacuum pumps...offering you in still larger measure the protection and convenience of undivided responsibility.

Shown above is one of the many Sarco pumps...it's the streamlined Sarco type S condensate pump. Designed and built to Sarco's traditionally high quality standards, it assures you top performance and long, trouble-free life. The many advantages include:

...Low 7½" inlet...Close coupling...No sub-base needed. Inspection? Just unscrew 3 nuts and lift the motor; no need to disconnect the piping. For a complete list of features, mail the coupon today.



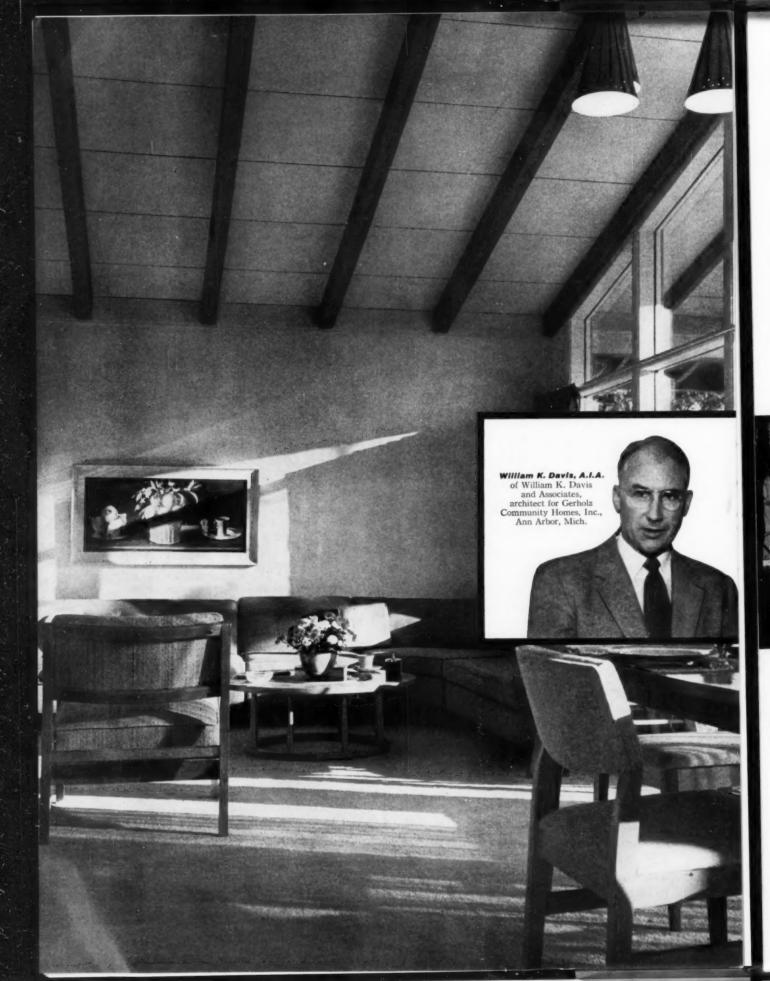
Selection — The experienced Sarco-Sarcotherm engineering staff will gladly help you select the right Sarco condensate or vacuum pump for each job.



Undivided Responsibility—From one reliable "Complete Line" source...SARCO-SARCOTHERM ...get not only condensate and vacuum pumps but also heating specialties, steam traps, temperature regulators, finned-tube radiation, and weather-compensated control systems for steam and hot water heating.

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Award winning 800 home project features Insulite Roof Deck

Insulite 3-in-1 Roof Deck helps win awards—hits magazine cover! Westgate Park, community of 800 homes now under construction in Flint, Michigan, has won two awards from the NAHB—and now the home at left is featured on the February cover of LIVING For Young Homemakers.

William K. Davis, A.I.A., is designing 9 out of 10 of his Westgate Park homes with Insulite Roof Deck...

because Insulite 3-in-1 Roof Deck fulfills the design aims of exposed beam ceiling construction *while* saving \$100 per 1000 sq. ft. of surface. Gerholz Community Homes, Inc. is the builder.

Look at these pictures. See how Roof Deck can help you build better and save, then send for complete information. On-the-job pictures and construction details. Write Insulite, Minneapolis 2, Minnesota.



It's roof deck—2' x 8' units cut application time as much as 45%. Only one material to handle. New Insulite Roof Deck eliminates need for separate roof boards, insulation, lath and plaster and ceiling finishing. New Insulite Roof Deck can save twelve man hours per 1000 square feet of surface compared with 2" x 6" D&M roof sheathing. It's finished ceiling — The underside of Insulite Roof Deck is finished with flameresistant surface. Lay Roof Deck over prefinished beams...and ceiling is done. No need to plaster, paint, stain, wax. Cuts labor and material costs. In 2' x 8' units, 1½", 2" or 3" thick—with or without vapor barrier membrane (depending on climate).

And Insulation with vapor barrier. No need for other insulation. 2' Roof Deck is comparable to 2' wood deck plus 1' fiberboard insulation. Available in 3 thicknesses to meet insulation requirements in any climate, Absorbs sound better than wood or plaster. Exclusive vapor barrier protects against condensation within the unit.

build better and save with

Insulite

INSULITE IS A REGISTERED TRADEMARK



INSULITE. Made of hardy Northern wood

INSULITE Division of Minnesota and Ontario Paper Company, Minneapolis 2, Minnesota

quick ways to check quality in classroom wardrobes

Is It Safe? Each EMCO door has its own hardware. There's a wide space between each pair of doors when open. Can't pinch or crush arms or fingers.



Does It Provide 100% Ventilation?

Wide clearance under doors permits air to circulate through EMCO wardrobes and out ceiling vents. Special hook arrangement helps air circulate around each garment.

Is It Easy to Clean? Notice that the EMCO recess is unobstructed. No partitions or legs to trip over or to slow cleaning and waxing.



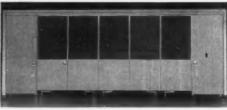
How Easily Do the Doors Operate?

The smallest child in the room can easily open and close even the EMCO multiple operating wardrobe doors.

And doors are "whisper quiet" when they move.



How About the Hardware? All EMCO hardware is of solid cast brass or malleable iron and is permanently anchored. Solid cast bronze lower pivot carries all the weight.



These are the basic features of good wardrobe design. You are sure of them all and more when you Specify—then INSIST on EMCO. For complete details write for the FREE EMCO Catalog and name of nearest EMCO representative. No obligation.



CLASSROOM WARDROBES

Manufactured by
EQUIPMENT Manufacturing Co., Inc.
1400 Spruce St., Dept. 1400-AR, Kansas City, Mo.

PRODUCT REPORTS

(Continued from page 227)



Flush Doors, in a full line of both solid and hollow cores, are faced with rotary-cut Gold Coast cherry veneers. The close texture of this wood requires no stain or filler and makes it easy to finish with one or two coats of brushing lacquer. The Mengel Co., Louisville, Ky.



Lighting Fixture. The Surf-A-Lile, for flush-to-the-ceiling mounting, is 3½ in. deep and available in 12-, 17- and 24-in. widths. It is finished in baked enamel steel, although translucent plastic sides are available for some ceiling light reflectance, and has ½-in.-square Polycube polystyrene louvers. It is available for two, four and eight lamps. Electro Silv-A-King Corp., 1535 S. Paulina St., Chicago 8.



Light Fixture. Edge-Glo fluorescent light fixture has aluminum sides and polystyrene egg-crate louvers and is available for two, four or six 40-watt, 48-in. T-12 lamps. The depth of the fixture is only $3\frac{1}{2}$ in., and it can either be suspended or mounted directly to the ceiling. Curtis Lighting, Inc., 6135 W. 65th St., Chicago 38, Ill.

(Continued on page 262)



I4-Story Medical Building Has High-Strength Bolting

In this typical installation picture, the nut is being drawn up on the Bethlehem High-Strength Bolt by means of a pneumatic impact wrench, as a holding wrench grasps the bolt head firmly.

This attractive new structure is the University of Oregon Medical School, in Portland. The 14-story building accommodates 277 patients and has extensive facilities for medical research. The steel members making up its 1170-ton frame were joined by Bethlehem High-Strength Bolts rather than by riveting.

Because of the saving in erection time they make possible, Bethlehem High-Strength Bolts are ideal for connecting structural steel members. They save time because they can be installed quickly by means of a calibrated pneumatic impact wrench. And not only does the wrench draw up the nut rapidly, it also applies sufficient torque to provide permanently tight joints.

Relative freedom from noise is another advantage of high-strength bolting, making it particularly desirable in areas where undue noise would be objectionable. For a pneumatic impact wrench is less noisy than a riveting gun.

Bethlehem High-Strength Bolts are made of strong carbon steel. They are heat-treated by quenching and tempering, and can be relied on to fully meet the requirements of ASTM Specification A-325.

If you would like to have more information about high-strength bolting, we suggest you call in one of our engineers. Just get in touch with the nearest Bethlehem office, or drop a line to us at Bethlehem, Pa.

BETHLEHEM STEEL COMPANY BETHLEHEM, PA.

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BETHLEHEM STEEL





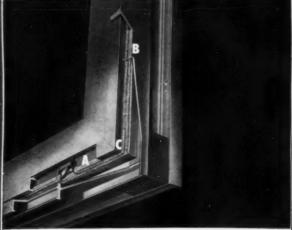
tighter seal



another all-weather advantage of Miller sliding glass doors

Continuous, double-seal, mohair pile weatherstripping is around entire perimeter of sliding panels. This feature plus Miller's interchangeable single or dual glazing mold - gives real advantages to architects, builders and owners everywhere. Write for literature. See Sweet's Arch. File (16d/MI). See your Distributor.





MILLER PIONEERED FEATURES SHOWN: Double-pile seal at



A threshold and 3 jamb. Note continuous seal at

© corner. D Interchangeable single or dual glazing.



PRODUCT REPORTS

(Continued from page 260)



Light Fixture. Surfacers have steel sides and Gratelite louvers and are available for 2-, 4- or 8-ft lamps, either two or four lamps wide. The shallow depth and thin lines of the fixtures make possible any design; square, rectangle, T, U, L or H. The Edwin F. Guth Co., St. Louis 3. Mo.



Weatherproof Light for walks, steps, floors and corridors, the 15-watt Spero PL-6 is completely shielded on the top and sides to eliminate glare and brightness contrast. Non-rusting aluminum construction makes possible outdoor or indoor use. The top shield can be removed to furnish a full 180° beam. The Spero Electric Corp., 20500 St. Clair Ave., Cleveland 17, Ohio.



Heating and Cooling. The Permaglas warm air furnace line is being expanded by as many as 60 new models. Both gas- and oil-fired furnaces, ranging from 70,000 to 245,000 Btu per hr input ratings, have new engineering and styling, as shown in the illustration above of the Lo-Boy and Hi-Boy models. Companion 2-, 3- and 5-ton cooling units, with air- and water-cooled condensers, are available. A. O. Smith Corp., Milwaukee 1, Wis.

(Continued on page 266)



How to succeed with the girls!

A sparkling washroom, using colorful American-Olean Tile, tells "the girls" that management is interested in their comfort and well-being. This installation at Standard Pressed Steel Co., Jenkintown, Pa., is a good example of the sunny effect that A-O Tile can give you.

Management approves, too, because ceramic tile is so

economical to maintain. No repainting or refinishing—just a simple swish with a swift mop or wet cloth, and a tiled room is as bright as new. Surveys show it is the least costly surface to clean.

TILE SPECIFICATIONS: Color Plate 348. Walls: 11 Ivory, 76 Sage Gray. Cap: 76 Sage Gray. Borders: Turquoise Shadowflash and Sage Shadowflash. Floor: Block Random; Turquoise Shadowflash and Sage Shadowflash.

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City	Zone—State—

"We save 8% to 15% on Construction costs with Amvit Jointed Clay Pipe"

Says John B. Kelly, President, C. & T. Affiliates, Inc.

"Amvit Jointed Vitrified Clay Pipe cuts costs and speeds construction," says John B. Kelly, President, C. & T. Affiliates, Inc. "We save from 8 to 15 percent on costs when we install Amvit Jointed Clay Pipe."

"The Amvit Joint is built in, ready for installation. Since no special preparations are needed, the line is laid quickly and easily. Immediate backfilling is possible."

When the pipe is "pushed" together, the joint is in constant compression. Water cannot force its way in or out, thus preventing costly ground water infiltration or root penetration.

Amvit Jointed Clay Pipe is just one of the many products manufactured in our plants across the nation. American Vitrified Products Company also produces concrete pipe, clay pipe, flue liners—both glazed and unglazed, and clay liner plates.

For more information, write or call American Vitrified Products Company, National City Bank Building, Cleveland, Ohio, or our office nearest you.

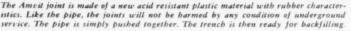
City of Camden, N.J.

City Engineer
George Rogers

Assistant City Engineer

John Morgan









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Now Span 32 Feet with Robertson Long-Span Q-Deck

LIGHT WEIGHT . GREAT STRENGTH . EASY TO INSTALL . GOOD LOOKING

After considerable testing and research, H. H. Robertson Company is pleased to announce the availability of a new product much needed in modern construction-a steel deck that will span great distances with the required load-carrying capacity. This new Long-Span Q-Deck, now in production, carries with it all the basic qualities and advantages of Robertson's well known Standard Q-Deck. Tight side laps become standing seams and are caulked and mechanically fastened at regular intervals to act as a vapor barrier and for structural stability. Units are easy to handle and erect with a minimum crew. They install quickly and tightly because of precision manufacture. Long-Span Q-Deck fills a long felt need in schools, supermarkets and other buildings where longer single spans bring construction economies and design flexibility. Any standard insulation and built-up water-proofing can be used. Use the coupon to write for technical literature about this new Robertson product.



H. H. Robertson Company

2404 Farmers Bank Building • Pittsburgh 22, Pa. In Canada: Robertson-Irwin Ltd., Hamilton, Ontario In England: Robertson Thain Ltd., Ellesmere Port, Cheshire Offices in All Principal Cities World-Wide Building Service



Individual units are 12" wide by 7½" high, rolled from metal-coated steel in 18, 16, 14 and 12 U.S. Gage. Standard lengths up to 32 feet maximum.



For supermarkets and schools much greater latitude of design is allowed by increasing deck span. Considerable saving in structural steel is made possible, and time and labor are cut down in the erection of the deck itself.

Please send free inform	ation on Long-Span Q-Deck.
NAME	TITLE
FIRM	

PRODUCT REPORTS

(Continued from page 262)

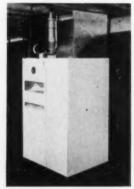
Heating-Cooling Unit. A combination heating and cooling unit for installation in multi-unit buildings has a self-contained, air-cooled cooling unit with a built-in heating coil which operates off the central steam or hot water system. The Type 920 Recessed Air Conditioner is installed through the wall, with the louver frame flush with the outside wall. This single access to the outside supplies fresh air for cooling at the condenser



and discharges the warmed, humid air leaving the condenser. The unit is 30 in. high, $32\frac{1}{2}$ in. wide and protrudes

into the room 15½ in. The outer casing is finished in a prime coat so that it can be repainted to match the room decor, Mueller Climatrol, 2005 W. Oklahoma Are., Milwaukee 15, Wis.

Stainless Steel Louvers, with weather-stripping, spring forms and self-locking direct-drive handle, can be opened to 104°. They are balanced at the center and can be operated from either right or left. Available in all sizes in either horizontal or vertical louvers. Cal-State Louve Mfg. Co., 2464 Fletcher Drive, Los Angeles 39, Calif.



Heating-Cooling. The Mark IV Air-Refiner is a heating-cooling unit designed for the residential market. Engineered for uniform air distribution, the Mark IV also includes electrically controlled humidistats to hold humidity constant and an electrostatic filter to remove dirt, pollen, smoke and other common contaminants from the air. The unit is housed in a white cabinet, as shown above. Conco Engineering Works, Mendola, Ill.



Infra-Red Gas Heaters which heat only those objects which cross their rays without heating the air between are said to be economical for outdoor use. In the Milwaukee drive-in restaurant shown above, the heaters have been installed above each of 50 car bays to warm patrons and carhops. Developed in Germany, they are manufactured here by Perfection Industries, Inc., 7609 Platt Ave., Cleveland 4, Ohio.

(Continued on page 270)



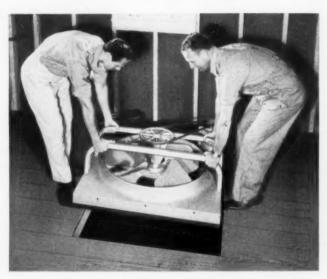


COOL COMFORT FOR EVERY HOME at lowest cost



You can now provide a modern and efficient cooling system for any type or size home without a burden of cost to you or the buyer. An easy-to-install Hunter Package Attic Fan will fill an entire home with refreshingly cool air. It quietly pulls in fresh, outdoor breezes as it forces out hot, sticky, inside air...causing room temperatures to quickly drop from 10 to 20°.

Hunter gives you all five of these features:



Easiest to install of all attic fans, the Hunter requires no replastering, repainting, suction box or other "extras" for installation or maintenance. Compact unit rests on attic floor, needs only 18" to 26" attic clearance. A Hunter is easily installed in any home, old or new.

1. Adaptability to any home

Five sizes available, with certified ratings from 5000 to 16,000 CFM.

2. Ease of installation

The Hunter unit is complete, including automatic ceiling shutter.

3. Low initial cost

A Hunter gives a home cool comfort at lowest possible cost.

4. Dependable service

A Hunter is unexcelled for trouble-free operation year after year.

5. Guaranteed performance

The fan unit is completely guaranteed 5 years; motor and shutter one year.

HUNTER



HUNTER FAN AND VENTILATING COMPANY
396 S. Front St., Memphis, Tenn.

SEE OUR CATALOG IN SWEET'S

Mail for copy of "COOL EVERY ROOM WITH A HUNTER ATTIC FAN"

Hunter Fan and Ventilating Company 396 S. Front St., Memphis, Tenn.

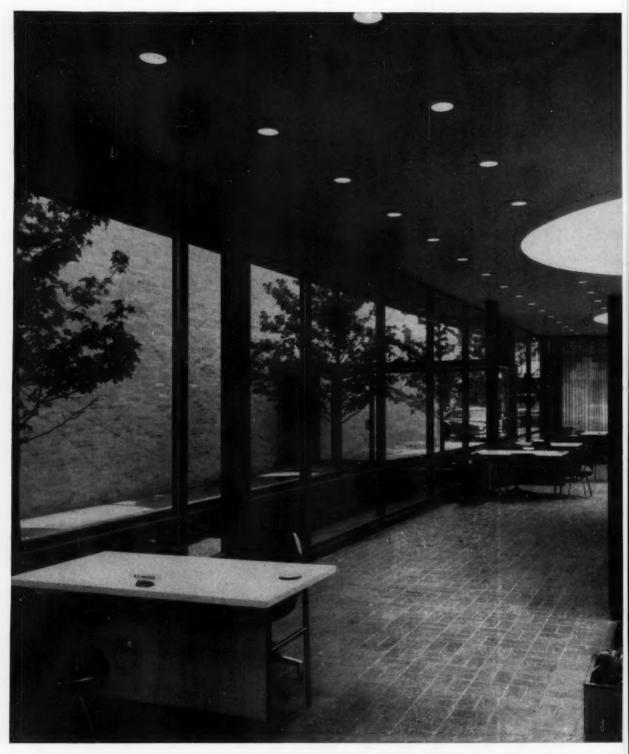
Name

Address

City_

State.





ARCHITECTS EERO SAARINEN & ASSOCIATES of Bloomfield Hills, Michigan, have achieved impressive originality in designing the Irwin Union Bank and Trust Company building in Columbus, Indiana. Adding importantly to the beauty, advanced architectural planning, and practical advantages of this structure is Pittsburgh's Twindow. These window units, with insulation built in—were utilized for all exterior glazing.

Unique Bank Building in Columbus, Indiana,

makes telling use of

PITTSBURGH GLASS



SHOWN HERE ARE the drive-up tellers' windows, glazed with Pittsburgh's Multiplate[®]. This laminated heavy plate glass is bullet-resisting—a feature which makes it ideal for applications of this kind.

THE ENTRANCE to the bank building is highlighted by the full use of Pittsburgh Glass. The floor-to-ceiling glass panels give this outstanding structure an open, airy atmosphere which is appreciated by the depositors and bank personnel alike.

Design it better with



PITTSBURGH GLASS

Your Sweet's Architectural File contains detailed information on all Pittsburgh Plate Glass Company products . . . Sections 7a, 13e, 16a, 16d, 21.



PAINTS . GLASS . CHEMICALS . BRUSHES . PLASTICS . FIBER GLASS

PITTSRIPGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

PRODUCT REPORTS

(Continued from page 266)

Awning Window. A new weatherstripped, aluminum awning window features a strip-proof compound operator enclosed in the center of a heavy, torque-resistant tubular sill. It is claimed that 1 lb of pressure at the crank develops 28 lb of lifting force in the operator. The windows are available in standard and modular sizes. Ware Laboratories, Inc., 3700 N.W. 25th St., Miami, Fla.



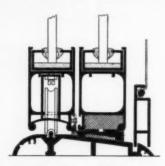
Ventilating Range Hoods have threespeed pushbutton controls for fan and light, thus eliminating costly wall switch installations. The Push-A-Matic line includes two basic hood models, one with a square cutout for use with a Berns Air King Twin Blower and the other with a round cutout for use with either their CF or TC Series fans. The hoods come in standard lengths of 24. 30, 36 and 42 in, and are designed to fit all cabinet depths from 111/2 to 131/2 in. Berns Mfg. Corp., 3050 N. Rockwell St., Chicago 18, Ill.



SINCE 1888



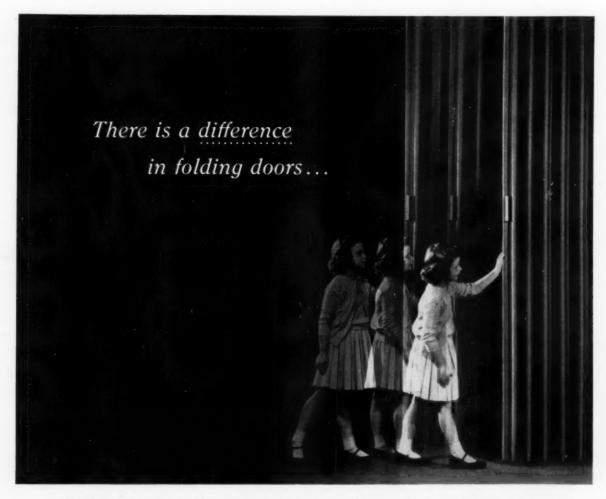
Aluminum Window, a section of which is pictured above, is manufactured in a variety of layouts, sizes and types, including a picture window with side or bottom louvers, casement or projected-out sections. Louvers, with sliding-door closures, can be fitted with filters. Basic frame sections of the Macocraft window have a minimum 7-in. depth, which provides for insulated glass. The Maco Corp., Huntington, Ind.



Sliding Glass Doors. The base section above shows a profile of the sill, adjustable tandem, train-type wheel dollies and new glazing converter to allow wrap-around glazing with plate-glass installation of the Capri sliding glass door line. The Continental is an allanodized aluminum unit designed especially for 1-in. Thermopane insulating glass, with an adaptor for 1/4-in. plate glass. With a 4-in. profile, including jambs and screen doors, it is said to be suitable for installation in any climate. T. V. Walker & Sons, Inc., P. O. Box 547, Burbank, Calif.

(Continued on page 274)

HAVEN-BUSCH



Foldoor's easier operation makes the difference!

Folding doors are first of all functional. And the easier they operate, the better the function. That's one reason why more and more architects, contractors and owners are specifying Foldoor—the easiest-to-operate fabric-covered door. Only Foldoor is constructed in continuous volutes—without large "pockets" to trap air and retard operation. In addition, Foldoor's rugged, simplified hinge-and-pantograph mechanism reduces metal-to-metal friction by an average 61%. But make no mistake: the same streamlined engineering which results in easier action also provides the rugged rigidity you demand on the job . . . as proved by the toughest in-use tests. Get the full facts from your nearby Foldoor Distributor—listed under "Doors" in the yellow pages.

HOLCOMB & HOKE MANUFACTURING COMPANY, INC. 1545 Van Buren Street, Indianapolis

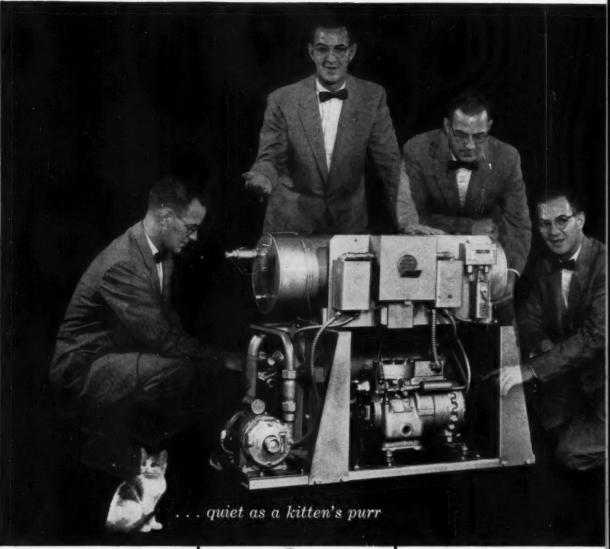
In Canada: FOLDOOR OF CANADA, Montreal 26, Quebec Installing Distributors in All Principal Cities

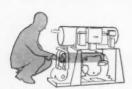
ONLY FOLDOOR IS DIFFERENT AND BETTER THESE SIX WAYS

 Easier operating 2. Neater installation 3. Better appearance 4. Greater space-saving 5. Structural durability 6. Longer life.



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Please se	nd free copy	of new 1956	A.I.A
FOLDOOR	Catalog		
NAME			
PIDM			
F13UM			





Model S ACMC Condenser — maximum heat transfer, minimum size

Acme's integral fin tubing and compact coil design puts extra heat transfer capacity in a size of condenser that adds to Flow-Cold's compactness.



The **ACMCO** DRY EX® recognized leader in the chiller field

Dry-Ex design puts extra chilling capacity in every inch of chiller space. Dry-Ex tubes are electronically rolled into the tube sheet openings — no internal joints, no trouble on the job!



Accurate controls match unit operation to the load

All necessary controls are furnished to give fast, accurate response to system requirements. Compressor operates only when needed: power consumption and wear are minimized.

A product of Acme Industries, Inc.-Manufacturers of Quality Air Conditioning and

ACHUS new #101710110

today's most advanced packaged chiller in the 3 thru 20-ton range

Acme's research and development men have done it again: Significant improvements in design and better-than-ever quality have been built into the new Flow-Cold to make it today's most advanced small-tonnage packaged liquid chiller. No new position, this — since introduced in 1950, the Flow-Cold has been the industry's most widely used packaged chiller.

BALANCED, PROVEN COMPONENTS. Acme takes components that are individually tops in their fields, selects the exact capacities needed for real efficiency and economical operation, and assembles them in a compact package. That's the Flow-Cold—you can't buy better!

EVERY FLOW-COLD FACTORY TESTED. Every Acme Flow-Cold unit is fully charged, tested and operated under actual load conditions before shipment.

SIMPLE TO INSTALL AND OPERATE. With over 36 years of Acme field experience to draw from, Flow-Cold engineers design these packages with the contractor and use in mind. Fast, easy connections — trouble-free operation!

For packaged chiller capacities from 20 thru 300 tons, investigate the versatile Acme Flow-Therm. Standard or custom packages to fit your needs.



Advanced design Acmo Compressor — precisionbuilt for quiet, dependable operation

New, accessible hermetic-type compressor has aluminum pistons—is dynamically and statically balanced for quiet, vibration-free performance.

Refrigeration Equipment since 1919



PRODUCT REPORTS

(Continued from page 270)

Pre-Cast Insulated Stack, with 10 to 24 in. inside diameter, handles flue gases from coal, oil or gas fuels and can be used with boilers, furnaces, ovens, retorts and incinerators. Its insulated walls are of a refractory material which will withstand high temperatures and at the same time prevent excessive heat loss through the stack. It is assembled in 3-ft sections, with joints permanently sealed with an acid-proof, high-temperature cement.



The joints are made tight by draw-uptype joint bands held in place by sheet metal screws. Sections are either Standard for temperatures not exceeding 800 F or Hi-Temp for temperatures up to 1600 F. The jacket is aluminum sheet. Van-Packer Corp., Betlendorf, Iowa.

Room Ratings, an innovation in rating ventilating fans and recessed lighting, are designed to ease the job of specifying ventilating and lighting equipment for residential and commercial construction. They are slide rule types, easy to read and understand, with figures and designations based on square footage instead of cubic feet. Two Room Rating Calculators are offered by *Pryne and Co., Pomona, Calif.*





Room Air Conditioners that are only 161/2 in deep, 49 per cent less than earlier models, have been introduced by GE. The Thinline unit can be mounted in either the upper (as shown above) or lower areas of regular windows, and the installation may be made to permit normal raising or lowering of the sash. It is also adaptable to casement windows. Installed flush with one surface of a standard 10-in. wall, the Thinline unit will project a maximum of 61/2 in. from the opposite surface, as shown in the bottom photo above. Development of a sleeve that is built into the wall during construction makes "throughthe-wall" installation easy. Three models of the 25-in.-wide, 303/8-in.-high units are available: 1/2 (Model R-32N), 3/4 (R-52N) and 1 (R-72N) hp. General Electric Co., 5 Lawrence St., Bloomfield, N. J.

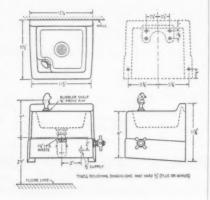
(Continued on page 278)



FOR PERFECT ADAPTATION

to current architectural trends... and constructed of durable acidresisting enameled cast iron to withstand the severest abuses of the school yard, this new HAWS drinking fountain assures lasting trouble-free service.

HAWS Model No. 7X drinking fountain contains HAWS complete sanitation features... with raised, shielded, angle-stream fountain head of chromium plated brass. Water pressure and volume is automatically controlled... it's antisquirt!



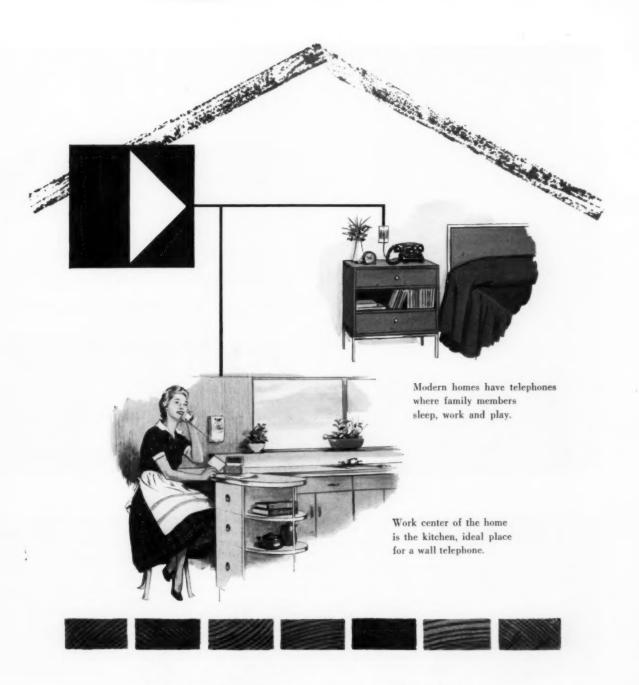
Industrial Designor

WRITE TODAY for full details of HAWS Model No. 7X...a complement to new construction...a vast improvement for modernization! It's designed to meet ALL city, county and state material and operational sanitation requirements. Specify HAWS with confidence!



DRINKING FAUCET CO.

1443 FOURTH STREET (Since 1909) BERKELEY 10, CALIFORNIA



Multiple telephone outlets and concealed telephone wiring are quality features in any home, large or small. Convenience-minded buyers are looking for them. Trendminded architects are providing them. Both parties benefit.

BELL TELEPHONE SYSTEM



Your Bell telephone company will be glad to help you work out economical concealed wiring installations. Just call your nearest business office and ask for Architects and Builders Service. For details on home telephone wiring, see Sweet's Light Construction File, 8i/Be. For commercial installations, Sweet's Architectural File, 32a/Be.



Immaculate Heart of Mary Church School Youngstown, Ohio P. Arthur D'Orazio, architect; Charles Shutrump and Sons, Co., contractor.



TRUSCON® "O-T"® Open Truss Steel Joists,

Ferrobord® Steeldeck and Projected

Steel Windows Help Create This Exciting

Daylighted outdoor corridor

This interesting outdoor corridor has been designed into the new Immaculate Heart of Mary Church School in Youngstown, Ohio. Almost monastic in appearance, the second floor corridor has been roofed by extending Truscon "O-T" Steel Joists and structurals across its full width. Truscon Ferrobord Steeldeck completes the roof except for a run of clerestory windows which bring daylight directly into the Truscon Architectural Projected Windows of second floor classrooms.

Truscon "O-T" Steel Joists are light, strong, fire-resistant floor and roof supports. Lightweight and easy to handle, they lessen time and labor costs, save material in supporting framework and foundations.

Ferrobord Steeldeck is clipped or welded directly to the steel joists. It comes in long lengths to span three or more purlins. Easy to handle, easy to place, it roofs large areas quickly—flat, pitched or curved. Erection is from above, no scaffolding needed. Full length interlocking adds extra strength.

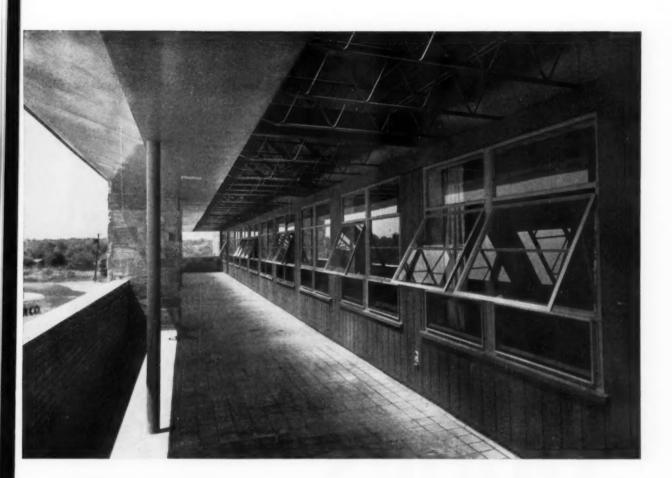
Truscon Steel Projected Windows provide superior ventilation plus minimum air infiltration. Integral baffles of Truscon's own special steel section provide casement-type full weathering contact—a Truscon exclusive feature in windows of this classification.

For more information and specifications on these quality Truscon building products, see Sweet's File or send coupon below.

REPUBLIC



World's Widest Range of Standard Steels





SCHOOL MADE FIRE-RESISTANT WITH TRUSCON METAL LATH AND PLASTER

Membrane fireproofing is a system of fire protection using metal lath and lightweight aggregates. Used in ceilings, partitions and for shrouding structurals, membrane fireproofing makes possible buildings of lighter weight, greater useful space and lower cost. Truscon Metal Lath and plaster make a safer school.

SCHOOL CONCRETE PROTECTED WITH TRUSCON WELDED WIRE FABRIC

Pennies buy you "concrete plus." Truscon Welded Wire Fabric reduces the rate of cracking. High strength steel wires keep cracks tiny and practically invisible. Concreted areas get lifelong protection. Specify concrete PLUS Truscon Welded Wire Fabric for longer-lasting, expense-free concrete slabs.



STEEL

and Steel Products

REPUBLIC STEEL CORPORATION 3110 E. 45th St., Cleveland 27, Ohio

Please send me more information on these Truscon Steel Division building products:

- ☐ Truscon "O-T" Steel Joists ☐ Truscon Welded Wire Fabric
- ☐ Truscon Steel Windows ☐ Truscon Ferrobord Steeldeck
 ☐ Truscon Metal Lath and Accessories

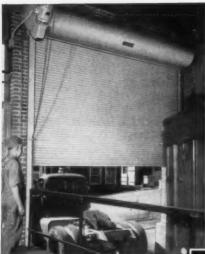
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Kinnear



Here is a **BIG** factor often overlooked by cost-minded business and industry: The floor and wall space . . . the time and labor . . . the upkeep and repair costs you can save with Kinnear Rolling Doors.

Opening straight upward, they coil out of the way. Their rugged, all-metal, heavily galvanized construction withstands hardest use . . . toughest weather conditions. Built any size, with manual or electric operation. Ideal for old or new buildings of any type.

Write for details on Kinnear Rolling Doors—the BIG value in door efficiency.

The KINNEAR Mfg. Co.

FACTORIES: 1860-80 Fields Avenue, Columbus 16, Ohio 1742 Yosemite Ave., San Francisco 24, Calif. Offices and Agents in All Principal Cities

KINNEAR ROLLING DOORS

PRODUCT REPORTS

(Continued from page 274)

Built-in Wall Air Conditioner designed to permit integration with base-board radiation in private homes and apartment buildings can fit under any window-sill height and is compatible with any heating system. The self-contained unit is said to be silent in operation, drip-free and weatherproof. Its rating is 1 hp. Amic Mfg. Corp., Long Island Cily, N. Y.



Three-Dimensional Fabric. A new fabric is now being marketed in which shrinkage is used purposely, under controlled conditions, to achieve depth. Woven flat on a regular loom with polyethylene yarn and conventional textile fibers, the fabric, called *Trilok*, forms puffs when the polyethylene is shrunk by boiling water in a matter of seconds. The puffs, as shown in the lower sample in the photo above, arrange themselves in a design determined by the weaving pattern of the material. U. S. Rubber Co., 1230 Arenue of the Americas, New York 20, N. Y.



Plastic Ceiling Panels produced from Polyflex and Methaflex sheet can be grouped to form a suspended ceiling, as in the not-completed installation above, or sectional shielding. They are said to transmit well-diffused light at a high percentage of the intensity of the light source. They can be installed under a sprinkler system, since they will contract rapidly and fall from their mountings when exposed to the heat of a fire. Plax Corp., Hartford, Conn.

(Continued on page 282)



Sprayed "Limpet" Asbestos on the ceiling of Charlie's Cafe Exceptionale, Minneapolis, Minn., provides a high degree of acoustical correction, contributing to the restful

atmosphere of this famous eating place. Four-time winner of the Holiday Magazine Award, Charlie's Cafe Exceptionale is considered one of America's finest restaurants.

For efficient control of heat and sound: Sprayed "Limpet" Asbestos

There's nothing like it! If you're planning an office, restaurant, public building, industrial plant—any structure that calls for efficient control of sound and heat—you should know about Sprayed "Limpet" Asbestos, a unique self-bonding insulating material. "Limpet" is *sprayed* on with special machines to form a continuous felt-like coating that completely blankets ceiling or wall surfaces. There's no nailing, cutting, fitting, clipping.

Echoes are eliminated, annoying noise is reduced

drastically-trapped by thousands of pores between the "Limpet" asbestos fibers.

Costs are cut. An ideal thermal insulator, Sprayed "Limpet" Asbestos cuts fuel and air conditioning bills. Because it's all asbestos, it provides excellent fire protection.

Technical and application data available. See your Sweet's Architectural File. Write for additional information and the names of Sprayed "Limpet" Asbestos applicators in your area who have been approved and trained by K&M.

KEASBEY & MATTISON

COMPANY . AMBLER . PENNSYLVANIA



Effective date of the
NEW WEST COAST
GRADING RULES
RULES NO. 15
will be
MARCH 15
1956

Boards, Dimension and Timbers of Douglas fir, West Coast hemlock, Western red cedar and Sitka spruce will have new grade names instead of numbers beginning March 15, 1956.

NO.1. becomes CONSTRUCTION

MILL 750
CONST

NO. 2 becomes STANDARD

MILL 750

NO. 3 becomes UTILITY

MILL 750

NO. 4 becomes ECONOMY

Not Customarily Grade Stamped

There is no change in the identification of Select Merchantable Boards, Select Structural Dimension and Timbers, or vertical grain Clears.

The top grade of flat grain Clears becomes C&Btr.

MILL 750
CABTR

Your free copy of the new grading rules will be mailed to you soon after February 1. Watch for it.

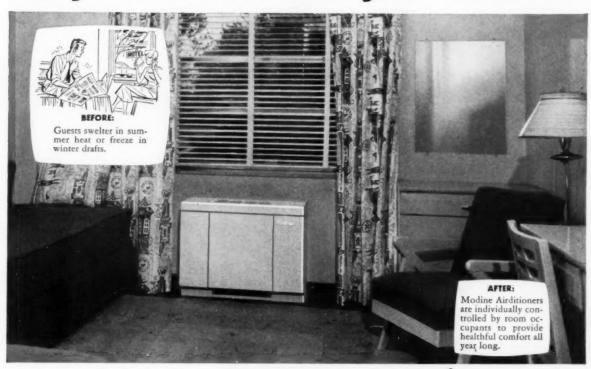
WEST COAST LUMBERMEN'S ASSOCIATION

1410 S.W. MORRISON, PORTLAND 5, OREGON

All Grade Stamps shown are registered, U. S. Patent Office.



Air conditioning existing buildings may be easier than you think...



It's as simple as this, with "Morting

- Individual units replace radiators in each room to be air conditioned. Hot water from your present boiler is piped to each unit for heating. Cold water from a central chiller is supplied through the same piping for summer cooling. A small motor (1/30 to 1/12 hp) operates two quiet fans in each AIRditioner to provide refreshingly cooled or heated air circulation. There are no expensive ducts to install. Here is low-cost, year-round comfort for new or existing office and apartment buildings, hotels or motels, hospitals or homes.
- 2. Operating flexibility cuts costs. With Modine AIR-ditioners, room occupants control their own temperatures. Units are operated only when and where they are needed. No need to air condition an entire building to provide comfort only in occupied rooms.
- 3 Types and sizes for every application. AIRditioners are offered in console (illustrated), concealed, built-in overhead and exposed ceiling models . . . in sizes to meet your remodeling or new construction requirements. All units are furnished with quiet, slow-speed

th HUZDITIONEIS

motors (1050 rpm top speed) having built-in thermal overload protection as a standard safety feature.

Want to know more?

Consult the classified section of the phone book for your Modine representative. Contact him or mail the handy coupon for illustrated booklet.

	MODINE MFG. CO. 1510 DeKoven Avenue, Racine, Wisconsin
6 1	Gentlemen: Please send me a free copy of Bulletin 745-D, describing Modine AIRditioners.
	Name
	Firm
-	Address
	City

*Trademark

ENTRANCE WORTHY of Special Interest!



WHEN PLANNING YOUR NEXT ENTRANCE . . . for any business, commercial, or institutional building or establishment . . . take a good look at the newest data on revolving doors. Almost limitless adaptability plus a host of convenience and cost-saving advantages . . . offered only by these doors that are "always open" yet "always closed" . . . list them as specifications that build soundest client relations.



See Sweet's Architectural File Or Classified Section of Your Telephone Directory

REVOLVING DOOR ENTRANCE DIVISION
INTERNATIONAL STEEL COMPANY
2051 EDGAR STREET • EVANSVILLE 7, IND.

PRODUCT REPORTS

(Continued from page 278)



Wood Edging. Exposed plywood edges can now be matched to panel faces with an inch-wide tape of wood veneer so thin and flexible that it is packaged in rolls. Weldwood Flexible Wood-Trim, available in mahogany, oak, walnut, birch and Korina, is flexed by a patented process and mounted on a latex-impregnated paper backing. The 1/58-in.-thick trim can be cut with scissors, knife or razor blade and applied with any high-quality wood glue. No heat or clamping is required. U. S. Plywood Corp., 55 West 44th St., New York 36, N. Y.



Parquet Floor that can be laid over concrete, plywood or wood floors is now being distributed in this country. Each 2½-sq ft BondWood unit, measuring 5½ fo by 19 by 19 in., is made up of 16 squares, 4¾ by 4¾ in., consisting of several small hardwood slats. Paper glued to the face of each unit holds it intact until it has been laid on an adhesive base. The paper is then removed and the squares eased into place, seated and finished according to color desired. Available in oak, maple, walnut and beech. Harris Mfg. Co., 408 E. Walnut St., Johnson City, Tenn.



Metal Deck Clip. A Speed-Lok clip shown above simplifies and speeds installations of a new Alumadek metal decking structural roof system. The system consists of high-strength aluminum panels which are fastened to zinc-plated steel sub-purlins with the self-expanding Speed-Lok clips. Metal Decking Corp., 11 East 16th St., Indianapolis, Ind.

(Continued on page 286)



WITH FOUR NEW FEATURES

- All units are PRE-WIRED
- All units are COMPLETELY ASSEMBLED
- New construction provides EASIER INSTALLATION
- One basic unit for any type of ceiling construction

AND WITH THIS ADDED ...

Skylike is now lower in cost

To meet increasing demands, Skylike has developed new production techniques making possible vastly improved units and lower costs. These advantages are being passed directly on to users. For complete detail write to...

SKYLIKE ... THE FIRST AND FINEST IN MODULAR SILVERED BOWL INCANDESCENT LIGHTING

SKYLIKE LIGHTING, INC.

A SILVRAY ASSOCIATED COMPANY

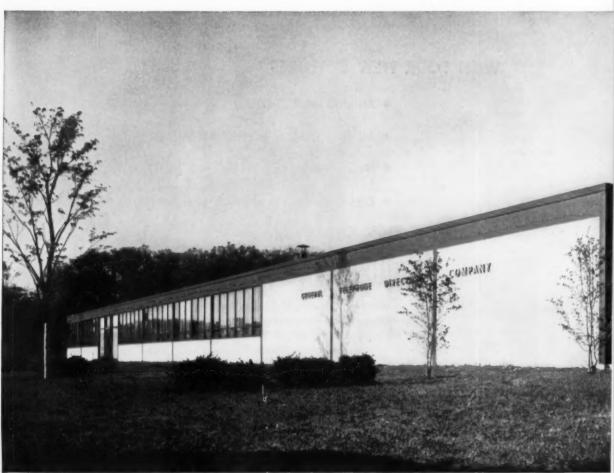
Bound Brook, New Jersey

RKO Bldg., New York 20, N. Y.



Temperature control story of a modern printing company

How Honeywell Electronics cuts costs,



General Telephone Directory Company, Des Plaines, Ill. (a subsidiary of General Telephone Corporation). Architects-engineers: Pace Associates, General contractor: Turner Construction Company, Heating and air conditioning contractor: Economy Plambing and Heating Company,

Printing and paper storage area of General Telephone Directory Co. dramatizes the scope of the control ob necessary in the building. In addition to maintaining ideal comfort levels, humidity must be controlled to permit most efficient conduct of printing operations.

Other major advantages of the installation are:

... big savings on cooling—outside air is used to help cut costs of refrigeration.

...big savings on maintenance—with electronics only one man is needed to maintain all mechanical equipment. ...an outdoor thermostat anticipates weather changes in winter, preventing cold weather chill.

... central control panel gives one man a single check and adjustment point.

... automatic sequencing—from heating to ventilating to cooling. Comfort is controlled automatically by a single thermostat. No need for special separate thermostats.

... unusual stability is achieved by use of three-thermostat team—outdoors, in the space, in discharge air.



improves air conditioning system efficiency



Big-system conveniences, important operating economies, comfort—you can provide them at reasonable cost with Honeywell Electronic Temperature Control.

 G^{OOD} performance of commercial air conditioning depends on good control. Not until the recent development of Honeywell Electronics was the *best* air conditioning control economically feasible for installations of moderate size.

Now it's possible for facilities such as those of General Telephone Directory Company, Des Plaines, Illinois, to have an air conditioning system with features completely modern—features that once were restricted logically to much larger installations.

These features, explained briefly above make possible benefits that only Honeywell Electronic Customized Temperature Control can provide at sensible cost. For General Telephone they make possible an ideal indoor environment—both for the comfort of employees and for printing processes so dependent on precise control of temperature and humidity.

These benefits suggest some of the ways Honeywell Electronics can help you give your clients unprecedented comfort, convenience, economy—in heating, ventilating, air conditioning and industrial control, in any building, new or existing.

Call your Honeywell office for a new booklet that tells more fully how to apply electronics to your clients' control problems—and for information on the economical Honeywell Periodic Maintenance Plan. Or if you prefer write Honeywell, Dept. AR-2-25, Minneapolis 8, Minnesota.

Honeywell

Electronic Controls



112 offices across the nation



Tecrazzo lends its good offices to good offices

In any office building where appearances count, people look up to Terrazzo underfoot. Traffic can't hurt it, dirt can't get a foothold in its smooth, jointless surface. Easy to clean, and keep clean, the maintenance costs are negligible. Architects praise its versatility and faithfulness to their color-and-design planning. Installed for beauty, permanence, and performance, Terrazzo provides floors, wainscots, and stairs of uniformly inviting appearance. Specify Terrazo and forget!

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404 Sheraton Building, 711 14th St., N. W., Washington 5, D. C. Send free AIA Terrazzo Kit to

Name...

Firm..

Street Address.

City ..

...Zone.....

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PRODUCT REPORTS

(Continued from page 282)





Acoustical Metal Panels can be attached directly to the underside of metal decking by the use of a simple clip and standard T track. The process involves the hand-pressing of a Kemp clip onto a 34-in. mild steel, copper-coated stud nail welded to the underside of the steel decking, bar joists, etc., as shown in the top photo above. A T track is then snapped into the Kemp clip, and perforated metal panels, topped by a soundabsorbing pad or blanket, are snapped into the tee track, as shown in the bottom photo above. Two new sizes of panels - 12 by 36 in. and 18 by 36 in. - are being produced by Acoustics Mfg. Corp., 17210 Gable Ave., Detroit 12, Mich. Bulletin available.



Pencil Sharpener. The Apsco Tri-Pointer makes possible one-handed sharpening of mechanical clutch-type pencils. By slipping the pencil into one of three coded nozzles, and rotating, the user achieves one of three desired points: needle (4°), medium (7°) and blunt (10°). A dip into the center lead-cleaning pot, filled with metallic hay, removes all loose graphite. The Dexter Super-10 and Dexter Super-10 Draftsman are available for wood-cased pencils. Apsco Products, Inc., Los Angeles, Calif.

(Continued on page 290)

remember these 3

specialized Wheeler fixtures for hazardous • non-hazardous locations

DUST-TIGHT

For Class II — Groups F & G, & Class III Requirements For atmospheres containing carbon black, coal, coke, flour, starch, grain or easily ignitible flyings or fibers.

VAPOR-TIGHT

Designed for use in locations where extreme dirt conditions, high moisture content, acid or alkaline atmospheres are prevalent.

TEXTILUME

Specifically designed for maximum corrosion resistance when used in humid atmospheres such as those found in textile mills.



BRAND NEW!

For the first time, 2-LAMP, 90 WATT UNITS in Dust-Tight, Vapor-Tight and Textilume lines!

Write for

BULLETIN #98

ask your lighting supplier about

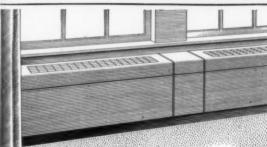
Wheeler



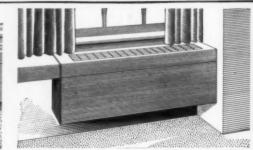
WHEELER REFLECTOR COMPANY • 275 Congress St., Boston 10, Mass.

Distributed Exclusively through Electrical Wholesalers



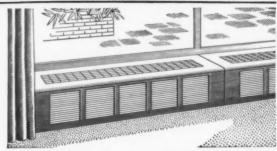


FILLER SECTIONS GIVE CONTINUOUS APPEARANCE



N I I

SINGLE UNITS ADAPT TO DIFFICULT LOCATIONS



FOOT-HIGH UNITS FIT UNDER LARGE GLASS WINDOWS

Office Air Conditioning Goes Modular!

Handsome new Weathermaster Units fit any window or wal treatment—are assembled from standard "building blocks"

Now the world's finest air conditioning system—the Carrier Weathermaster* System—offers the world's most flexible and adaptable under-the-window units. New Modular Weathermaster Units are based on the "building-block" idea. Standard components can be assembled into units that fit any size or shape space you may plan. The units actually become part of the architecture in any multi-story, multi-room building—old or new.

THEY'RE MODULAR! If you are modernizing an older building with traditional windows, you can plan for the units to hang on the wall, up above the baseboard. If you're designing a new building with low windows, units can hug the floor—as little as a foot high. If your plan requires it, these units can be extended from wall to wall or column to column by adding filler or bookcase sections—or be confined to the wall space right under the windows.

THEY'RE MODULAR! You can plan the units so that they become part of the wall. You can make them look like a decorative ledge ... or built-in cabinets... or modern bookcases. There's no "added-later" look. And they are so easy to assemble that you can install them in record time.

THEY'RE MODULAR! With Weathermaster Units, you can save on ductwork. You can use fewer vertical risers, because the air supply can be extended through handsome prefabricated enclosures to units in series. And you have greater freedom in location—for lines can enter at the bottom of the unit or either side.

THEY'RE MODULAR!—plus all the famous Carrier Weather-master advantages. A twist of the dial on the unit in each room brings the exact climate you want, any time of the day, any day of the year. Operation is quick, quiet, automatic, dependable.

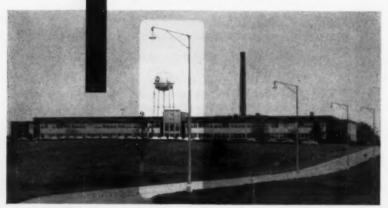
Find out more about the new Carrier Weathermaster Modular Units that give a new look to office building air conditioning. Call the Carrier office listed in your telephone directory or write for Catalog 36N-64 that will help you picture handsome Modular Weathermaster Units in the buildings you are planning. Carrier Corporation, Syracuse, New York.

*Reg. U.S. Pat. Off



air conditioning refrigeration • industrial heating

AT THE UNITED STATES STEEL CORP. RESEARCH CENTER...



Servisafe

POLE UNITS SOLVE LUMINAIRE SERVICING PROBLEMS

Maintaining pole-mounted luminaires is a simple one-man job at the handsome new U. S. Steel Corporation Research Center, Pittsburgh, Pa. Each luminaire can be relamped and cleaned within a few minutes whenever necessary.

This speed and ease of servicing is provided by Thompson "Servisafe" Pole Units. Featuring a patented foolproof mechanism, they permit an unskilled workman to disconnect and lower a luminaire... service it... and then reposition it while standing on the ground. And there is no electrical hazard because the lowered fixture is "dead".

Decorative as well as functional, "Servisafe" units are the safest, easiest and most economical means of maintaining pole-mounted lights. "Servisafe" Bracket Units for wall or wood pole mountings also are available.

WRITE FOR BULLETIN WPH-54 FOR COMPLETE DETAILS.



THE THOMPSON METHOD of luminaire maintenance . . . both feet on the ground and both hands on the job.



THE HOMPSON ELECTRIC CO.

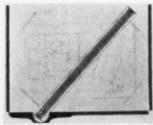
1199 Power Avenue

Cleveland 14, Ohio

PRODUCT REPORTS

(Continued from page 286)

Woven Pile Fabric Weather Seals. Four-irch samples of 25 different certified fabric seals are boxed for demonstration of U shapes, flat shapes, plastic shapes and other special shapes. A number-keyed chart in the top of the box shows details of each of the seals. Catalog 6 gives further data. Schlegel Mfg. Co., Rochester 7, N. Y.



Angular T Square and Protractor in one drafting unit are offered as part of a Drafteze birch drawing board to make possible easier and faster angular drawings. The protractor at the apex of the rule is set to the proper degree and the square is then locked into position. The square is of mahogany with a maple blade and clear lucite edge. Weller Engineering Co., 169 La Verne Are., Long Beach 3, Calif.



Intercom System. The Select-A-Call pushbutton telephone system is engineered for small business, inter-executive office or domestic applications, fitting requirements from 2 to 12 stations. The telephones give selective signaling, common talking, and lamp indication when the line is in use. Optional equipment includes PA system, code calling, speaker phone, monitors for given areas. Operable up to 5 miles. Telecom, Inc., Kansas City, Mo.

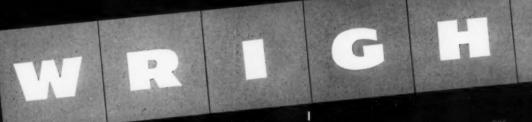
Adding Machines in two-tone pastel colors are part of a "Color-Keyed Secretary's Office" designed to ease eyestrain and tension. The most modern business machines have been toned to combine with modern furniture, colored walls, floor coverings and other furnishings. The colors used are pastels in blue, gray, beige, turquoise and "eye-ease" green. Clary Corp., San Gabriel, Calif.

CROWNING ACCOMPLISHMENT in resilient flooring... VINYL TILE









See, feel, flex a square of WRIGHT Vinyl Tileyou'll agree there's no flooring material to compare with it, either for elegance or practicality.

End product of long research and unique manufacture, WRIGHT Vinyl Tile is fully homogeneous. That's why it never wears unevenly ... why its high lustre

and elegant color patterns gleam uniformly over the whole flooring for the entire life of the tile.

But more than that -- WRIGHT Vinyl Tile is a supremely practical flooring. It will not buckle under temperature changes. It will not warp or crack. And it is highly resistant to grease, acids, alkali, light and flame. Moreover, it is water-proof, non-slip, and easier to keep clean than any other type of resilient tile flooring.

Discover for yourself how remarkable WRIGHT Vinyl Tile really is -- how perfectly suitable for every type of installation. Fill out and mail the coupon for full information and free samples - before you select flooring for your current projects.

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Pella
wood Multi-purpose windows

UNDERSCREEN OPERATOR



locks in any position

A pin-and-socket device locks the sash in many positions between fully open and fully closed. The aluminum Underscreen Operator is PELLA'S exclusive way of opening and closing sash without screen interference. And it's furnished at <u>no</u> extra cost.

OPERATES QUIETLY

The aluminum Underscreen Operator arm slides through a solid Nylon guide for smooth, quiet operation. Guide is wear resistant...needs no lubrication.

Inside screens are inconspicuous. They save storage space because they may be left in place year 'round. Wood frame screens are included with all windows that ventilate. All-aluminum screens available at nominal extra charge.

PELLA MULTI-PURPOSE WINDOWS are low in cost, yet have these quality features and many others—like all-aluminum and stainless steel hardware and stainless steel weatherstripping, sash and frame of select western pine, toxic-treated, mortised and tenoned. Self-storing, inside "storms" available when specified. A packaged window. Completely factory assembled. See our catalog in Sweet's Architectural or Light Construction File. Representatives throughout U. S. and Canada.

Pella

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CLIP AND MAIL TODAY

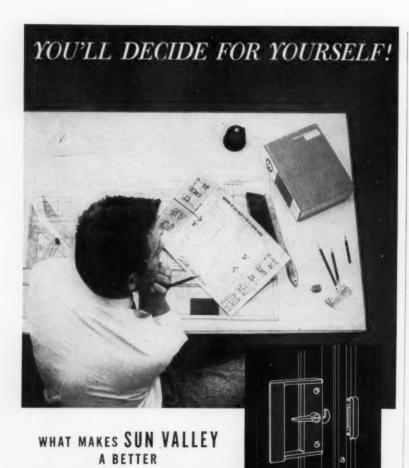
ROLSCREEN COMPANY, Dept. H-11
PELLA, IOWA
Please send helpful 20-page book,
"Library of Window Ideas."

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ATTENTION MR.



Sun Valley helps you maintain your pride of design in your completed project by furnishing the finest structural design and quality in aluminum sliding doors. Constructed of rugged extruded aluminum ... yet slim and trim to provide attractive functional styling. Sun Valley doors use a greater expanse of glass, creating the new "Outward Vision"... making the outdoors an immediate living part of the indoors.

ALUMINUM SLIDING GLASS DOOR

Doors glide silently, effortlessly on sealed ball bearings. Complete weatherstripping with continuous strips of mohair and extruded neoprene assure positive weather control.

Three models, Sun Valley Sr., for deluxe installations, the Jr., for low budget and multiple housing installations, and the new Imperial for all-weather double glazing, give full coverage in price range and sizes. Ease of installation saves time and cuts construction costs.

Sun Valley's nationwide distributor organization assures availability in your area when you designate Sun Valley.

Before you select a sliding door, study Sun Valley...see what makes this a better door and the door to specify.

You'll find Sun Valley sliding doors (A.I.A. File No. 16E) listed under section 16d/Su in the 1956 SWEET'S catalog or write Dept. 205 for complete information and detailed drawings for your files. Complete line of aluminum sliding windows and jalousies also available.



8354 SAN FERNANDO ROAD, SUN VALLEY, CALIF.

OFFICE LITERATURE

(Continued from page 228)

Aluminum Railings. Catalogue M-56 presents 44 pages of photographs, drawings and dimensions of aluminum railings produced by Blumcraft of Pittsburgh, 460 Melwood St., Pittsburgh 13, Pa.*

Panel Radiators, "Solving Modern Room Heat Distribution Problems with Shaw Panel Radiators" is the title of a new 12-page, illustrated booklet from Shaw-Perkins Mfg. Co., 201 E. Carson St., Pittsburgh 19, Pa.*

Forced Recirculation Generators. Type LFW generators, oil-, gas- or stoker-fired, for high-temperature water are described, with engineering data, in a 10-page brochure, Bulletin 700, from The International Boiler Works Co., East Stroudsburg, Pa.

Contemporary Incandescent Lighting is the title of a catalog (AIA File 31-F-2) which is index-tabbed for concentric rings, Domelites, chandeliers, incandescent recessed (round, square and adjustable) and others in the line of Litecraft Mfg. Corp., 8 East 36th St., New York 16, N. Y.*

Solar Shades. Modern Vent solar shades, with weather control by means of movable horizontal or vertical vanes, and Ray-O-Vent awning shutters are presented in an 8-page, illustrated brochure from Superior Window Co., 5300 N.W. 37th Ave., Miami, Fla.

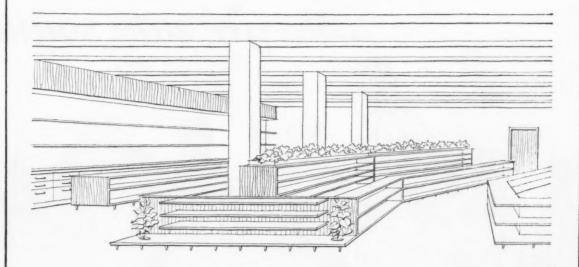
Building Panels and Doors. Two 4-page brochures describe Panelfab laminated honeycomb core building panels in porcelain enamel and aluminum and Panelfab aluminum-faced honeycomb core doors. Panelfab Producls, Inc., 2000 N.E. 146th St., No. Miami, Fla.*

Architectural Troffers. Illustrations and dimensions of 1- and 2-ft models in all types of ceiling construction are given in a 36-page catalog. Two other new catalogs, Schedules 218 and 218A, give prices of fluorescent lighting equipment and troffers. Smithcraft Lighting Div., Chelsea 50, Mass.*

Wiring Devices. A condensed catalog of specification grade wiring devices for institutional, commercial, industrial and high-class residential installations has been published by The Bryant Electric Co., Brideport 2, Conn.*

(Continued on page 298)





You Can Get a Complete **Engineered Color Study for Your Plans-FREE!**

OU can often make your plans more acceptable to your clients by including a detailed color program.

• Almost everyone who owns or operates an industrial, commercial or service enterprise recognizes the importance of the influence of color upon people. That's why such a detailed program of color recommendations often can be very helpful.

• Why not let us submit engineered color recommendations to go with your plans?

These recommendations are based upon the principles of Pittsburgh's system of COLOR DYNAMICS®. This method of painting has successfully demonstrated its ability to improve productive efficiency, morale and well-being in many fields.

• We'll be glad to make such a detailed study for you without cost or obligation. Simply call your nearest Pittsburgh Plate Glass Company branch and arrange to have one of our color consultants see you at your convenience. Or mail coupon at right.



Engineered color recommendations, complete with color samples, are bound in booklet form. Also included are suggestions for the correct types of coatings for every kind of material and construction.

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- ☐ Please have your representative provide us with further information about Pithsburgh's free COLOR DYNAMICS engineering service for architects.
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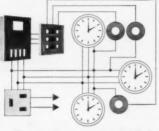
SBURGH PLATE

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

With EDWARDS school programming ... they're safe, sound,

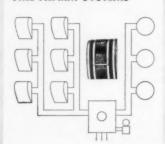


EDWARDS SYNCHRO-MATIC CLOCK AND PROGRAM SYSTEMS



The simplest centrally controlled system. Engineering perfection of the Telechron® motor obsoletes hourly correction...eliminates a master clock...provides simultaneous reset instantly after a power failure—automatically, or by the mere flick of a switch.

EDWARDS SCHOOL FIRE ALARM SYSTEMS



Edwards offers "hug the wall" look plus absolute dependability of performance in a new "foolproof" single action pull lever station that's factory tested 100 times. Can be combined with the newest automatic system for complete protection 24 hours a day.

EDWARDS INTERCOM-MUNICATION SYSTEMS



Edwards new Intercommunication System when combined with an Edwards Program system operates without a switchboard...provides privacy and flexibility. Utilizing the same electric conduit results in an inexpensive installation that is virtually maintenance-free. and protection systems



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Edwards complete line of bells, horns and buzzers give the correct tone and intensity to overcome all noise conditions. The "Adaptabel", typical of Edwards specialization, has no moving contacts or armatures, with automatic compensation for plunger wear. You make certain it's a "once in a lifetime" installation when you specify Edwards! The people at Edwards are perfectionists...and their skill comes from over 80 years specialization in one field only —electrical signaling, communication and protection equipment.

Concentration on specific products means quality and dependability unmatched by other manufacturers! Edwards quality assures long life for your equipment with little, if any, maintenance and servicing.

It pays to specify the best...make sure it's Edwards. Ask your Edwards man, your Electrical Distributor or write: Edwards Company, Inc., Norwalk, Conn. (In Canada: Owen Sound, Ont.)

EDWARDS

Specialists in Signaling since 1872

DESIGN DEVELOPMENT MANUFACTURE

Standby electric power in operating rooms only is not enough!



ONAN Standby Electric Plants supply power for all essential services

Patients, hospital personnel and property may be endangered when any other vital equipment cannot be operated or important service performed ... especially when the power outage is of long duration.

performed ... especially when the power outage is of long duration.

From the wide range of Onan Electric Plants you can specify a model with the capacity to operate all essential equipment ... automatic heating system, respirators, aspirators, X-ray machines, ventilators, communications, pumps, elevators and lights for as long as these services are needed.

When power interruptions occur, the Onan Emergency Power System takes over automatically . . . supplies electricity for the duration of the outage . . and transfers the load back to the regular source of power when service is restored.



Standby power for every need

Hospitals, homes, schools, churches, hotels, radio stations, stores, businesses . . . all modern buildings need standby protection. Onan builds units for any requirement . . . 1,000 to 50,000 watts.

Write for Architects kit SP1020

D. W. ONAN & SONS INC.





OFFICE LITERATURE

(Continued from page 294)

Sliding Glass Doors, in aluminum or steel, are described, with quarter-size architectural tracing details, in an 8-page catalog (AIA File 16E) from Frank B. Miller Mfg. Co., Inc., 3216 Valhalla Dr., Burbank, Calif.*

Bibliography on Prestressed Concrete, 1955 edition, listing more than 2100 American and foreign literature references, is priced at \$2. A supplement, containing the material added to this new edition, is available at 35¢ to those who purchased the 1954 edition. American Concrete Institute, 18263 West McNichols Rd., Delroit 19.

Concrete Masonry Design Manual. A new edition, priced at \$5, contains 130 pages divided into nine sections. Pages can be removed for tracing and reinserted in the loose-leaf binder. New page inserts will be published from time to time. Concrete Masonry Association, 3250 W. 6th St., Los Angeles 5.

Package Unit Steam Generators are cataloged, with data tables and descriptions, in Bulletin PSG-2 (10 pp., illus) from Henry Vogt Machine Co., 10th and Ormsby Sts., Louisville, Ky.

Fenestration. "48 Ways Light Can Make Money for You" is the title of a planning kit which presents plans using 48 different modular window units. Fabrow Mfg. Inc., 7208 Douglas Rd., Toledo, Ohio.

Guideposts to Wood Markets is the title of an 18-page booklet in which are presented some of the special fields of research of the *Timber Engineering Co.*, 1319 18th St., N.W., Washington 6, D. C.

Plumbing Fixtures. A reference guide for commercial, industrial, institutional and residential use, including a 32-page catalog on vitreous china and cast iron plumbing fixtures, color samples and an idea sheet, is available from *Richmond Radiator Co.*, P.O. Box 111, Metuchen, N.J.

Aluminum Chain. Lite-Link chain for decorative and ornamental purposes, with illustrations of typical installations, is covered in a folder from Al-Re-Ka Products, Inc., 259 Delaware Ave., Buffalo 2, N. Y.

(Continued on page 302)



Section of the executive offices White Motor Co., Cleveland, Ohio. Architect, Dalton-Dalton & Associates. Contracting electrical engineer, Anton Eichmuller. Electrical contractor, Hatfield Electric. "Lucite" extruded by The Southern Plastics Co., Columbia, South Carolina. Recessed luminaires by The Wakefield Co., Vermilion, Ohio.

Better looking, better lighting with diffusing panels of Du Pont LUCITE®

The new offices of the White Motor Company in Cleveland have been designed to combine high functional efficiency with unusual attractiveness. As far as lighting is concerned, diffusing panels of "Lucite" play an important role in this "dual-purpose" design.

Diffusing panels of extruded "Lucite" acrylic resin transmit optimum light without specular glare or shadow. They are strong, durable, free from discoloration, and dimensionally stable. Installation is a simple matter. Panels of "Lucite" are light in weight and easy to handle.

Extruded "Lucite" can be formed readily into desired shapes and is available in a wide range of transparent and translucent colors. For further information on how you can incorporate "Lucite" into your lighting designs write to E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department, Room 532, Du Pont Building, Wilmington 98, Delaware.



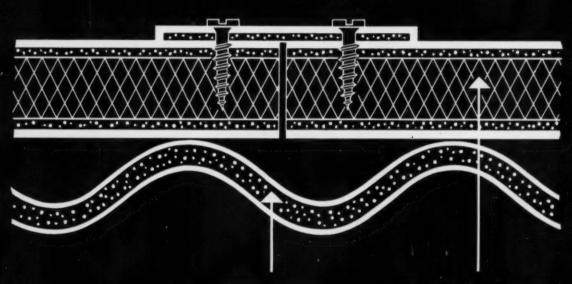
This "Quality Centrolled" label may be used only by qualified extruders of Du Pont "Lucite" acrylic resin. It assures the lighting industry that the extruded material conforms to standards for low shrinkage and uniform caliper established by E. I. du Pont de Nemours & Co. (Inc.).



Save up to 200% on insulated sidewalls with

CAREY THERMO

This is CAREY THERMO-WALL CONSTRUCTION



Exterior Sidewalls of 4.2 Careystone Corrugated

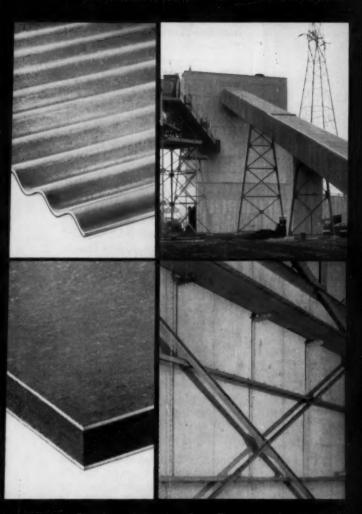
Finished Interior Asbestos-Cement Wall Surfaces of Carey Thermo-Bord (Including 1/8" Fiberboard Insulation).

This Is What CAREY THERMO-WALL CONSTRUCTION Offers Your Clients:

- Savings up to 200% in Sidewall Costs
- Permanent, Attractive Wear-Proof Exterior and Interior Surface
- . High Insulating Efficiency

- Asbestos-Cement Construction—Eliminates Maintenance Worries
- Lightweight, Easy to Erect . . . No Special Equipment Required

- WALL CONSTRUCTION



The above photos show Carey Thermo-Wall Construction in action on a new midwestern power plant. Careystone Corrugated (top) for permanent, attractive exterior sidewalls . . . Carey Thermo-Bord (bottom) for finished interior wall surface and insulation.

- Combines exterior and insulated interior sidewalls in <u>one unit</u>... from <u>one source</u> for prompt delivery!
- The fine appearance and permanence of asbestos at a fraction of the cost of comparable panel construction!

This combination of two, famous easy-to-erect Carey products cuts material requirements and job time. Tough and rigid . . . Thermo-Wall won't rust, rot or corrode. Painting is never required! Get full details on revolutionary Carey Thermo-Wall Construction from your Carey Industrial Sales Engineer. . . .

THE PHILIP



... or write direct to Dept. AR-2.

MFG. COMPANY Lockland, Cincinnati 15, Ohio



FLEET OF AMERICA, INC., 2029 Walden Avenue, Buffalo 25, N. Y.

OFFICE LITERATURE

(Continued from page 298)

Aluminum Windows for church and chapel, ribbon, projected windows, curtain wall and custom aluminum windows are detailed in a new bulletin from Marmet Corp., Wausau, Wis.*

Metal Roofing and Siding. Steelbestos, fire-resistant, asbestos-protected material for industrial plants and buildings, is discussed in a new bulletin available from American Steel Band Co., Box 565, Piltsburgh 30, Pa.*

Concrete Masonry for Schools is the title of an 8-page booklet which discusses the beauty, acoustics, fire resistance and insulating value of concrete. Portland Cement Assoc., 33 W. Grand Ave., Chicago 10, Ill.*

Copper, Brass and Aluminum as building materials for the home are presented in a 30-page booklet entitled, "Building to Endure with Revere," which is replete with photographs and detail drawings. Revere Copper and Brass Inc., 230 Park Ave., New York 17, N. Y.*

Draftless Air Conditioning is the subject of a new condensed catalog which contains all information necessary for specification writing for Multi-Vent air conditioning equipment. The Pyle-National Co., Dept. M-V, 1334 N. Kostner Ave., Chicago 51, Ill.*

Wall and Ceiling Paneling. "Marlite Plastic-finished Wall and Ceiling Paneling" is the title of a new 8-page catalog which also contains a listing of Marlite moldings and accessories. Marsh Wall Products, Inc., Dover, Ohio.*

Protective Equipment and materials against X-rays and gamma rays for industrial, hospital, clinic, laboratory and institutional use are discussed in an 8-page brochure from Ameray Corp., 45 Route 46, Kenvil, N. J.*

LITERATURE REQUESTED

Lewis A. Scarbrough, Jr., Architect, 1227 Azalea Court, Columbus, Ga.

William R. Watt & Associates, Consulting Engineers, 1290 N.E. 162nd St., No. Miami Beach, Fla.

Lee Lawrence, Architect, 346 Charleston Ave., Worthington, Ohio.

Victor Kraus, Allstates Engineering Co., 6459 Kennedy Ave., Cincinnati 13, Obio

Complete roof drainage systems now available

in Armco Stainless Steel

Lifetime Investment

When properly installed, roof drainage systems made of Armco Stainless Steel should last as long as the building. Yet first cost is generally less than other high quality roof drainage products.

Highest Strength

When you specify Armco 17-7 Stainless Steel for roof drainage you get the strongest metal used for this purpose. Gutters withstand heavy loads of ice and snow without sagging—resist buckling and cracking due to extreme temperature changes.

Blends with Surroundings

The soft, subdued finish of Armco Stainless Steel for roof drainage harmonizes well with any other building material or color scheme.

No Patina to Stain

There is neither rust nor patina to wash off on painted woodwork or masonry in completely stainless steel roof drainage systems. This means fewer repainting and cleaning jobs, much lower upkeep costs.

Easy to Install

Any good sheet metal man can install standard Armco Stainless Steel valley, guttering and conductor pipe. Flat strip is readily available for fabrication into special designs. Parts solder readily, producing strong clean joints.

Flashing and Accessories too

In a stainless steel roof drainage system, flashing should be made of stainless steel strip, and to prevent stains from corrosion of other metal, all accessories should be of stainless steel too. These include hangers, hooks, nails, rivets, screws, cleats and bolts.

Use the Coupon

For complete information, specification details and sources of supply, just fill out the coupon and mail it to us.



Steel roof drainage ite	ms 🗆	oliers of Armco	Stainless
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Street:			
City:	Zone:	State:	1

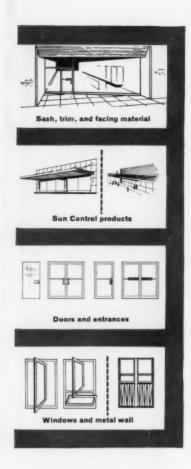


ARMCO STEEL CORPORATION 1635 CURTIS ST., MIDDLETOWN, OHIO

SPECIAL STEELS

SHEFFIELD STEEL DIVISION . ARMCO DRAINAGE & METAL PRODUCTS, INC. . THE ARMCO INTERNATIONAL CORPORATION

THE KAWNEER TOUCH... THE RESULT OF 50 YEARS OF ARCHITECTURAL COOPERATION



Throughout its 50 year history Kawneer has worked closely with architects in the development of architectural metals. The invention of resilient sash by the architect-founder of Kawneer revolutionized store design and retail merchandising. It was the foundation upon which many other architectural products were developed and manufactured over the years. Since the very first installation of Kawneer sash in the Johnson Department Store in Holdredge, Nebraska, in 1906, to the many thousands of modern store fronts and other buildings today with Kawneer doors, sash, trim, windows, metal wall and sun control products, compelling design has been the main consideration.

Pioneer in Aluminum Fabrication

The ability to give architectural metal products a certain "touch" has given Kawneer the opportunity to build products for all types of buildings. For example, Kawneer pioneered the use of aluminum for curtain wall construction and windows. Such notable buildings as the St. Paul Post Office, the Mellon Institute of Industrial Research and Boulder Dam Power House featured the famous Sealair windows and cast aluminum spandrels. Today. outstanding monumental edifices like the new, modern Tishman Building in Los Angeles and the Equitable Life Assurance Building in San Francisco feature metal wall construction by Kawneer. In the 30's, Kawneer was the largest aluminum window manufacturer in the U.S. The famous Sealair name was known as the ideal metal sash for home, office and factory. World War II stopped production of this window, but today it has returned again with outstanding features designed for the architect.

The great diversification of Kawneer architectural products and the company's leadership in the field of store front design, to a great extent, is due to the cooperation between the architectural management of Kawneer and the practicing architect. When it became apparent that World War II was ending, Mr. Lawrence J. Plym, President of the Kawneer Company, engaged a leading architect to help develop Kawneer-advanced store front design theories.

By this time, Kawneer had had experience in working all of the commercial metals—copper, bronze, steel and aluminum. It became apparent that aluminum was the ideal architectural metal because of its attractive appearance, corrosion-resistance, light weight and workability.

New Store Front Concept Created

The ideas that the consultant architect and the Kawneer staff developed have since become criteria for the entire industry. Useless ornamentation, or "rococo" were eliminated. The intrinsic beauty of aluminum was accentuated in simple, functional metal design. The concept of the "open front" was advanced. It was believed that the desired effect of the full vision front would be attained when framed. As a result, many kingsize trim-mouldings were introduced into the Kawneer line. The tremendously appealing flush glazing was developed. The result of this cooperation was the "K-47" line of architectural metals that have a professional design character, yet can be purchased out of stock.

Out of the post-war development came a new idea in aluminum facing. This is the product we all know today as ZOURITE. The consultant architect designed the profile of this facing while Kawneer engineers were experimenting with certain types of finishes. Although a regular alumilite finish

was in demand, a group of colors would make this product much more versatile. Many experiments were conducted with lacquers, baked enamels, paints and porcelain. None were quite satisfactory. Then, despite the low melting point of aluminum, Kawneer and DuPont pooled resources and for the first time, applied porcelain enamel to aluminum successfully to a production process. Today, Zourite is available in 10 different colors and a new additional profile has been designed that comes in pastel shades and alumilite. The color and profile combinations give the architect great versatility of design. Since the first Zourite, the use of color in architectural metals has become one of the major design focal points.

The K-47 line of architectural metals brought forth new concepts in store design. As a result of this research, many books were published to assist the architect. Illustrations developed at great expense are still available to act as guideposts.

In Constant Touch with Architects

The interest in new products grew to an enthusiastic pitch as a result of the immediate post-war development. Kawneer's Research and Development Department grew by leaps and bounds. The size necessitated formal working agreements with architectural firms. These firms act as consultants by establishing design criteria for proposed projects. They help in specifying the desired features, functions, size and modular requirements. Throughout the development period, the solutions to these requirements are reviewed by practicing architects.

To round out the development work in relation to the architect's needs, an architect with a heavy background in architectural research is retained on the Kawneer staff. He is concerned with desirable sizes and modular standards. He works with a group of the more prominent architectural firms so that their thought is brought into the design considerations.

Finally, Kawneer makes sure by surveying a large cross section of architectural firms during the formative stage to gather opinions and demands. If you have seen the phrase "Demand-Designed" in regard to a Kawneer product, this survey technique is the reason why.

After 50 years of close cooperation with architects, Kawneer can truthfully claim to have always been in "touch" with the profession and construction industry. Today the line has greatly diversified to include metal wall, flush doors, sun control products and other assemblies for big buildings, little buildings, stores, offices, factories, schools, et al. The organization has grown to include 12 factories and warehouses, over 110 salesmen covering the U.S., Canada and Latin America, and more than 1200 factorytrained dealers. From research to the installed metal, Kawneer devotes itself to the needs of the architect.

HOW YOU BENEFIT TODAY FROM THE KAWNEER TOUCH

- Good workmanship by skilled artisans for better-looking buildings.
- Extensive and modern production and warehouse facilities to insure prompt delivery.
- Research and development section cooperating with architects, to design new products for the construction industry.
- Thoroughly experienced engineers to provide precision products for quick and accurate erection.
- Nationwide company sales force for immediate counsel and service.
- Large factory-trained dealer organization for quality installation to conform to specification and design.

NEW PRODUCTS to commemorate 50th Anniversary

Kawneer maintains an extensive Research and Development program to contribute new products to the construction industry. Very soon, a number of new products will be announced in commemoration of its 50th Anniversary. Look for the announcement in the coming issues of this magazine.



The first truly modern store front with large display windows in Kawneer resilient sash.



The St. Paul Post Office and Customs House features Kawneer windows and spandrels.



The modern Tishman Building in Los Angeles features Kawneer Metal Wall including specially constructed louvers.

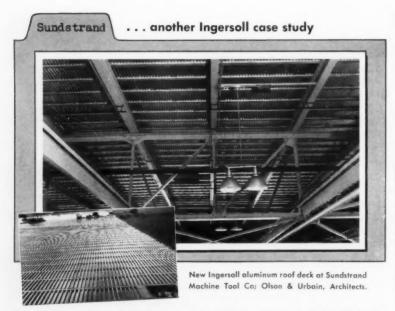


The modern store front of today represents the new "open front" concept for greater merchandising effectiveness.



foremost fabricator of aluminum and plastics for

the construction, aircraft and appliance industries



How Ingersoll's new idea in roof deck ended maintenance painting at Sundstrand

Funtional in every detail, Sundstrand Machine Tool Company's new plant at Belvidere (Ill.) embodies many new ideas. One of them-its new Ingersoll Roof Deck -has already earned Sundstrand a "Significant Plant" citation from FACTORY magazine.

The ceiling of the 30,000 sq. ft. plant is 55 ft. high. For this reason it was imperative that the structural roof system used be exceptionally strong, require minimum maintenance.

Unequaled strength

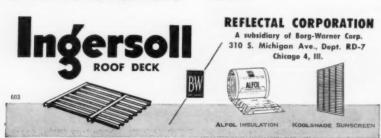
Given these stringent requirements, Ingersoll Aluminum Roof Deck was the only logical specification. It surpasses conventional systems in strength, never requires painting. And an added benefit is its thermal insulating value. Reflects radiant heat to keep the plant measurably cooler in summer!

A new concept in engineering, Ingersoll Roof Deck is a system of full-floating panels that clip to galvanized steel sub-purlins. Erection is quick, easy, positive. And besides eliminating the need for painting, Ingersoll's aluminum panels provide gleaming beauty, improve plant lighting.



In Aluminum or Porcelain Enamel

Ingersoll Roof Deck is available with panels of either aluminum or porcelain enameled steel. Porcelain provides all the benefits of aluminum, plus full protection against excessive moisture and other corrosive elements. Whether in aluminum or in porcelain enameled steel, Ingersoll Roof Deck may be just the product for your next job. Why not investigate today? Send for free brochure, along with complete case study of the award-winning Sundstrand installation.



THE RECORD REPORTS REVIEWING THE RECORD

(Continued from page 48)

Footnotes to architectural history, from the Architectural Record of

INTEREST IN JAPANESE DESIGN and living was keen enough to bring forth articles in both the January and February issues. "The eyes of the whole world are directed towards Japan at this moment," said Katharine C. Budd, writing about "Japanese Houses" in the January issue. "We are filled with wonder as we watch these persevering little men overcoming one difficulty after another in the face of formidable obstacles. We note the simplicity of the lives of this astonishing nation, and are curious about all details concerning their home life the meagre diet which strengthens their bodies, the cleanly habits which keep them in good health, and the apparent slightness of the houses which protect them from storms." Hopefully observing a trend toward "simplicity" in American taste, the author remarked, "The avidity with which people are buying the so-called 'Mission Furniture' in preference to the tortured woodwork which was the only thing 'on the market' a short time ago is proof that we are not slow in showing our appreciation of the best within our reach.

THE MINNESOTA STATE CAPITOL (below) occupied the attention of Russell Sturgis, one of the magazine's important critics, who replied to an earlier, and favorable, judgment of the building by Kenyon Cox. Mr. Cox had termed the building "one of the most imposing and beautiful of modern classical buildings,' but Mr. Sturgis was inclined to think the device of placing a "renaissance dome" on a "classical" building was in questionable taste, and took this opportunity to criticize what he felt was an unfortunate contemporary practice. "It would seem really, as if the easier way for



(Continued on page 310)



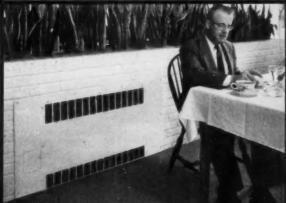
Dunham Horizontal Discharge Unit Heaters gently throw a blanket of warmth to keep shoppers comfortable in a new supermarket.



Dunham Heating-Cooling Units filter, heat, cool, ventilate and dehumidify air on an individual room basis... without costly central system ductwork.



Dunham Vertical Discharge Unit Heaters. These versatile units easily handle the high ceiling-height heating requirement of this locker room.



Dunham Cabinet Unit Heaters recessed into wall out of way of diners. Painted to match wall tone. Run quietly—efficiently. Seven different styles.

Your best bet when you want to move air ...depend on Dunham Unit Heaters

Depend on Dunham for unit heaters and you can find a model in the capacity range your particular job calls for. The Dunham line of steam and hot water heaters is complete—includes horizontal discharge, vertical discharge, cabinet, heating-cooling and blower type units.

Regularly used in a wide variety of installations, all Dunham Unit Heaters have design features that assure a good-looking, simple-to-make installation. All have construction features that assure minimum maintenance.

For your *next* heating job, why not *depend on Dunham* as thousands of others have, for *all* your heating needs?...so that full responsibility for final performance rests with one manufacturer.

For full information, clip and mail coupon.



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Pioneer and master of the exposed ceiling concept...

Frank Lloyd Wright



 \mathbf{F}^{OR} FIFTY YEARS the name Frank Lloyd Wright has signified freedom of architecture. "There should be as many types of houses as there are types of people, and as many differentiations of the types as there are different people," he says. "

Through his long and distinguished career, Mr. Wright has ever been a champion of new forms and new materials. Of Tectum, he says, "I have personally examined Tectum and find that it is a material of exceptional merit. Selection of Tectum could very well be applied to my theory of Organic Architecture—natural to the time and place for which it is designed and natural to the man for whom it is built."

Versatile wood-fiber Tectum provides a perfect material for a functional roof, advocated by Mr. Wright for so many years. A single thickness of Tectum serves as a roof deck . . . insulation . . . acoustical treatment—and is decorative as well.

Write now for complete information—or phone your nearby Tectum distributor. Tectum Division, Peoples Research and Manufacturing Company, 204 South Sixth Street, Newark, Ohio.

From Frank Lloyd Wright, An American Architectura.

Edited by Edgar Kantmann: Published by Horizon.



With the functional roof, Mr. Wright says, "You have a wide-spreading overhead that is really a release of interior space to the outside: a freedom where before imprisonment existed."*



Advanced thinking of Mr. Wright is very well illustrated by the living room ceiling of the Coonley House, Riverside, Illinois, built in 1908. It is a forerunner of today's exposed ceiling concept.

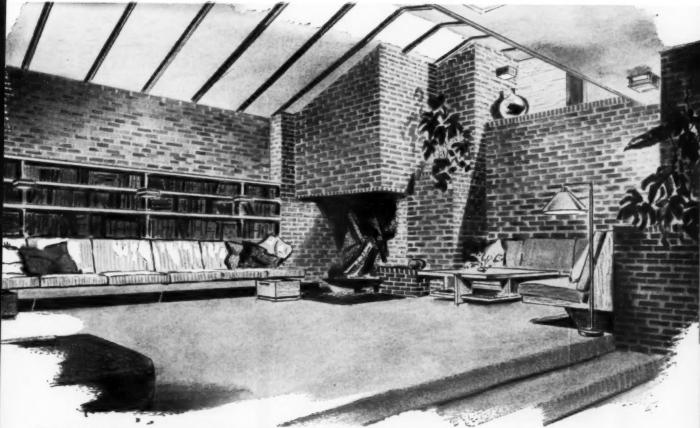


why lay a roof deck...



cover it with insulation...

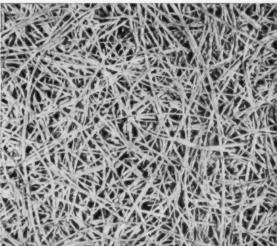




The studio-type ceiling, with exposed structural members as is shown above, is extremely popular in contemporary architecture today. Had Tectum been on the market at the time Mr. Wright designed this room, it would have provided the perfect deck and ceiling material.



Tectum goes down so quickly and easily. Here, in a single product, all "overhead" requirements are met. Think of this in terms of tremendous savings of time, labor, money!



and add acoustical material...

when you get all 3 with the



For Plants . Commercial Buildings . Institutions . Homes

ELIMINATE HEAT AND GLARE WITH Temlite

WOVEN WOOD INDUSTRIAL WINDOW SHADES



Better plant, factory and office working conditions and increase efficiency with economical, long-lasting, mainte-nance-free Temlite Woven Wood Shades. Spaces between splints admit the right amount of light and permit natural ventilation. In air conditioned buildings, Temlite Shades reduce operating costs of cooling units.

2 POPULAR FABRICS

The attractive industrial shades, with a wide variety of colors and finishes, are available in two fabrics. The D2 fabric, made from \%" beveled splints, is especially appropriate for offices, schools or hospitals where excellent, well diffused light is necessary. The heavy duty fabric is a hard service favorite for factories, made from 1/8 basswood splints in standard or Suntite beveled weave.

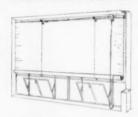
ADAPTABLE TO EVERY STYLE OF WINDOW OPENING



FOR CENTER-PIVOTED WINDOWS

Special supporting brackets are available for this type window which suspend shade far enough away from window to clear open ventilators. Guide cords draw lower end of shade toward sill prevent shade from blowing into

FOR WOOD OR PROJECTED **METAL SASH WINDOWS**



Widths from 5' to 15'8". raising cords end in flat cord which rolls up with the shade. Automatic cord locks. Rolls toward room.



FOR SKYLIGHTS

Shades are suspended from wires and are opened or closed by operating cords extending to convenient locations.

WRITE FOR INDUSTRIAL INSTALLATION FOLDER

The AEROSHADE COMPANY

A Division of Consolidated General Products, Inc. 326 Oakland Avenue

Waukesha, Wisconsin

THE RECORD REPORTS

REVIEWING THE RECORD

(Continued from page 306)

modern men to work, if they mean to go on copying, would be to take a structure of somewhere near the size and cost of their own intended edifice (taking not one feature alone, but the whole design), and then should give it an original treatment. It is in nearly that way that the styles of architecture have developed; and since, in the 20th century copies of the great past, original treatment is the last thing expected, the last thing tried, the last thing suggested to the designer, why, it behooves the designer to be all the more particular as to what he copies . . .

IF ANYONE HAS EVER WONDERED what it might have been like to design a house for P. T. Barnum, a report injected into an Architectural Aberrations piece may give some small indication. "Iranistan," it said of Barnum's house, "was distinctly projected as an advertisement, and an adjunct to the 'show business,' in the interest of which the owner trotted out an elephant to plow his grounds in sight of the New York and New Haven trains, as often as these went by."

D.H. BURNHAM & CO.'s building for the First National Bank of Chicago received extensive treatment by A. C. David, also in the January issue. Approving the design as "sensible and serviceable," Mr. David commented that "while the openings are used to bring out the vertical lines of the structure, all the projections on its front emphasize, on the contrary, mak,

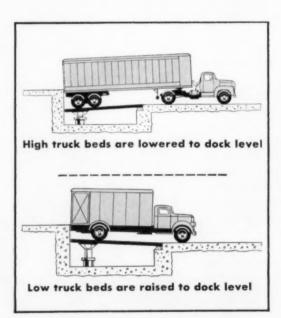
Burnham's First National Bank in Chicago



(Continued on page 314)

NEW ROTARY Truck Leveler SAVES DOCK SPACE AND SPEEDS LOADING





Hydraulic lift helps you design more efficient buildings

The new Rotary Truck Leveler, supported and moved by dual hydraulic jacks, raises or lowers the entire rear section of any highway carrier to bring the bed level with the loading dock platform. It has these important features:

Takes no space . . . installed in pavement in front of loading dock, leaving dock platform completely free of obstructions. Each Rotary Truck Leveler saves 96 sq. ft. or more of the building space required when a ramp is used.

Reduces to a minimum the incline angle between truck or trailer bed and dock. Materials handling equipment can move in and out with maximum speed and safety.

Handles any highway carrier at any loading dock. Has 40,000-lb. capacity and 28" travel. Will never be made obsolete by changes in materials handling equipment.

Dependable, economical push-button operation by Rotary Oildraulic electric power unit, located wherever convenient. Practically maintenance-free.

Easily installed in shallow pit at new or existing buildings. Does not interfere with closing and locking of overhead doors.

Raised center curb section guides wheels onto runways for fast, accurate truck positioning.

The Rotary Truck Leveler is sold and installed by a nationwide organization. These specialists in hydraulic lifting devices can assist you on design and specifications for single or multiple unit installations. Dependability of the Rotary Truck Leveler is assured by Rotary Lift Company's experience in building over 100,000 oil-hydraulic lifts and elevators. Mail coupon for complete data.

SEE OUR CATALOG IN SWEET'S FILES



TRUCK LEVELI

Manufactured by ROTARY LIFT CO., Memphis 2, Tenn.

Specialists in oil-hydraulic lifting devices

MAIL FOR COMPLETE DESCRIPTION AND ARCHITECT'S SPECIFICATIONS Rotary Lift Co.,

1137 Kentucky, Memphis 2, Tenn. Please send new catalog on the Rotary

Name.

Address

THE PREFERRED PLUMBING

CRANE INTRODUCES A NEW VERSION OF THE T-TYPE BATHROOM

FEATURED IN LIFE MAGAZINE



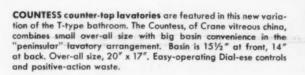
Here's a new and interesting variation of the popular T-type bathroom as featured in Crane's current advertisement in *Life*.

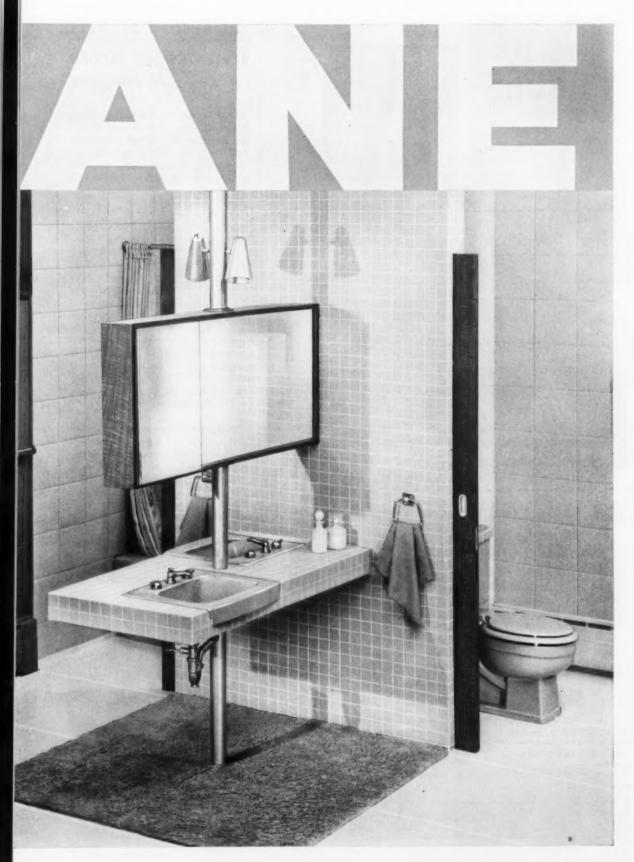
The new series of Crane advertisements in *Life* will contain many imaginative bathroom ideas for you and your clients—and will point up basic information on plumbing that your clients should know.

For example—your clients will learn that Crane quality means longer life of fixtures, controls and fittings...less maintenance, too. That Crane styling by Henry Dreyfuss is years ahead. That the seven Crane colors blend interestingly with any decorating scheme.

Here's how you'll benefit from Crane's *Life* advertising. When your clients see Crane in your specifications, they'll know you are putting the very best into their homes without increasing construction costs. And isn't that what they expect from you?

CRANE CO. General Offices: 836 South Michigan Avenue, Chicago 5
VALVES • FITTINGS • PIPE • KITCHENS • PLUMBING • HEATING











... and provides lifetime comfort underfoot!



All-vinyl . . . with beautiful colors going through-and-through, Amtico Vinyl Flooring is the most complete line and offers unlimited design possibilities . . . takes hardest wear for years.

America's most luxurious flooring,
Amtico Rubber Flooring is the
quality leader that gives your
customers lifetime economy,
rich beauty, cushioned comfort
and fire-resistance.



Also makers of Amtico Plastex Rubber Flooring

World's Largest Producer of Rubber and Vinyl Floorings

AMERICAN BILTRITE

TRENTON 2, N. J.

New York Office: 461 Fourth Avenue In Canada—American Biltrite Rubber Co. (Canada) Ltd., Sherbrooke, Quebec

See SWEET'S FILE, Architectural, for specifications and installation data, or mail coupon below:

AMTICO, Dept. AR-1, Trenton 2, N. J.
Gentlemen:
Please send me Free complete set of Samples and detailed information about Amtico Figorings.
Name
Firm
Address
City
(Please attach coupon to your business card or letterhead)

THE RECORD REPORTS REVIEWING THE RECORD

(Continued from page 310)

what is in this case the almost equally important horizontal dimension. . . . By means of shadow and projections, both heavy and faint on the surface of the building, the monotonous succession of the openings is tied together, and the two façades are properly and successfully aligned on the streets."

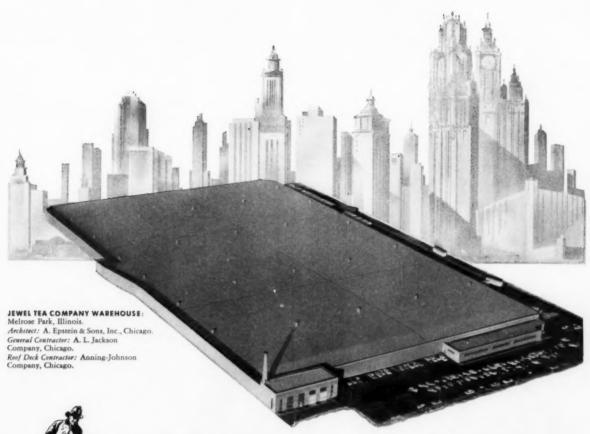
January's technical department featured the third part of its series, "The Proper Use of Terra Cotta." Wrote H. D. Croly, the Record's associate editor: "In the beginning [terra cotta] had everything against it — the force of custom, imperfect technical processes, the active opposition of the people interested in other materials, and certain disappointments which resulted from its misuse. But it has triumphed over all these adverse conditions; and at the present time every succeeding year finds its popularity wider and its standing more certain."

Notes and comments, the Record Reports section of the period, made note in February of a reinforced concrete house designed by architect Gordon A. Wright for John H. Osborne, of Auburn, N. Y., who had previously lost two houses by fire. The magazine commended Mr. Osborne for his "courage thus to defy time and calamity in his building, though affliction has left him widowed and childless." The house, it was reported, was "of an Elizabethan type, with battlemented walls . . ."



Naugatuck, Conn., High School, one of "Two Notable Buildings" reported in the Technical Department of February 1906, was the work of McKim, Mead & White and was called "the most beautiful and completely equipped school building in the country"

(More news on page 318)



Food for Chicago stays fire-safe under 480,000 sq. ft. of FIREFIGHTER ROOF DECK

Over eleven acres of Gold Bond "Firefighter" Roof Deck protect this mammoth food warehouse of the Jewel Tea Company in Chicago.

Incombustible Gypsum forms a natural fire shield over the entire building structure. Gypsum cannot burn and will not warp or transmit high temperatures when exposed to heat and flame.

Gold Bond "Firefighter" Roof Decks go up fast ... up to 30,000 square feet can be poured in a single day! And quick setting action permits full load capacity in under an hour. Gypsum Roof Decks,

installed by Gold Bond approved contractors, are adaptable to all roof designs—pitched, barreled, or flat. They are easily molded in place around skylights and vents and into irregular contours to accommodate drainage. Gypsum Roof Decks are as economical as they are fire-safe, because their low dead load permits lighter supporting structures, and allows substantial construction savings. Send in the coupon below for full details, including description, application, specifications, design tables and on-the-job illustrations.

NATIONAL GYPSUM COMPANY . BUFFALO 2, NEW YORK

Build better with Gold Bond

"FIREFIGHTER"

GYPSUM

ROOF DECK

Please send complete det	l me Technical Bulle ails on Gold Bond	etin No. 5 Firefighte	89 with
Name			
Address			



Pennsylvania School Flexivents®



3-high Flexivent groups, specified by Architect Boodon, dominate exterior view of Hughesville High School building



Andersen Flexivents welcome sunshine into bright, cheerful classrooms that make happier students

keep costs down

"In addition to speeding construction schedules and reducing costs," reports Carl Gehron of Jacob Gehron Co., Inc., Williamsport, Pa. builders, "Andersen Flexivent Windows do an excellent job of supplying the light and ventilation children need in classrooms."

Architect John Boodon, A.I.A., specified over 1000 Flexivents for the new Hughesville, Pa. High School shown on these pages. See how Flexivent groupings adapt perfectly to the low lines of this

modern building. Flexivent's extreme versatility plus availability in fixed or ventilating sash permits effective use in almost any fenestration plan.

Look into the advantages offered by Andersen Flexivents for schools and light commercial buildings you design. See Sweet's Architectural Files or write Andersen for Detail Catalog and Tracing Detail Files. WINDOWALLS are sold by established lumber and millwork dealers throughout the country including the Pacific Coast.

Andersen Windowalls

THE RECORD REPORTS

(Continued from page 314)

ON THE CALENDAR

February.

- 6-9 Fifth Annual Industrial Ventilation Conference, jointly sponsored by Michigan Department of Health and Michigan State University — Kellogg Center, Michigan State University, East Lansing, Mich.
- 7-9 The 11th Annual Reinforced Plastics Division Conference, So-
- ciety of the Plastics Industry Chalfonte-Haddon Hall, Atlantic City
- 13-16 Annual convention, Associated General Contractors of America, Inc. — Waldorf Astoria Hotel, New York City
- 13-17 Hospital Planning Institute, sponsored by the American Hospital Association — Sheraton-Park Hotel, Washington, D. C.
- 13-17 Dallas convention, American Society of Civil Engineers Hotel Baker, Dallas
- 13-18 Symposium on winter concreting, sponsored by the Danish National Institute of Building Research — Copenhagen, Denmark
- 13ff Sculpture and Architecture, an exhibit; until March 3 Grace Borgenicht Gallery, 61 E. 57th St., New York City
- 18-23 Annual convention, American Association of School Administrators — Atlantic City, N. J.
- 20-23 The 52nd Annual Convention, American Concrete Institute — Bellevue-Stratford Hotel, Philadelphia
- 23-24 The 12th Annual National Adequate Wiring Conference La Salle Hotel, Chicago

March

- 8-9 Annual Joint Conference on Church Architecture, sponsored by Church Architectural Guild of America and Bureau of Church Building, National Council of the Churches of Christ in the U.S.A. — Hotel Biltmore, Atlanta
- 12-16 The 12th Annual Conference, National Association of Corrosion Engineers — Hotel Statler, New York City
- 14-16 The 42nd annual convention, Michigan Society of Architects — Hotel Statler, Detroit
- 18-21 Spring Meeting, American Society of Mechanical Engineers Multnomah Hotel, Portland, Ore.
- 21-23 The 18th annual American Power Conference, sponsored by Illinois Institute of Technology in cooperation with 13 universities and nine national and regional technical societies — Hotel Sherman, Chicago

April_

- 9-10 A Conference on Urban Design and the Role of Planners, Architects and Landscape Architects in the design and development of cities; lectures, seminars, exhibition and discussions — Harvard University, Cambridge, Mass.
- 9-10 National Housing Conference Hotel Statler, Washington, D. C.
- 12-14 South Atlantic. Regional Conference, American Institute of (Continued on page 322)



Van's part in big project of General Electric Company

- Van feels signally honored to have had a part in providing food service equipment for industrial cafeterias in the Appliance Park project of General Electric Company... eventually 4,000,000 square feet under roof... over 12,000 employees to be fed, depending on industry growth.
- Van has provided equipment for two such cafeterias...all stainless.
 Illustration shows the first unit in operation, with a capacity for serving 3,000 meals daily to employees of the Range and Water Heater Department.
- · When you need food service equipment, be sure to call Van . . . first.

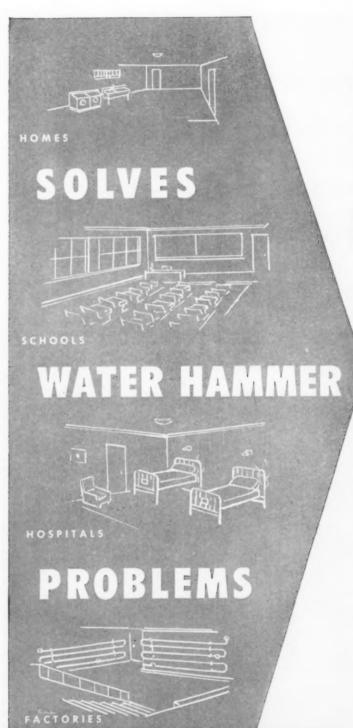
For more than one hundred years food service operators and their architects have been making use of Van as an Idea Center. Its reputation stems from its pioneering in design, fabrication, new material use!

She John Van Range G

Branches in Principal Cities

429 CULVERT STREET

CINCINNATI 2, OHIO







Cutaway view showing Absorbe tube and insert in normal position.



Absorbo tube and insert expanded to absorb shock

SHOCK ABSORBER

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Architects:

Copeland, Novak & Associates, New York

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Architects:

Loubet and Glynn, San Francisco. Consulting: Irwin Clavan, New York

Aluminum Applications:

Spandrels, Framing Members, Reynolds Vertically Pivoted Windows.



THE RECORD REPORTS

(Continued from page 318)

Architects — Washington Duke Hotel, Durham, N. C.

16ff Exhibition of stained glass: Christopher Scadron, stained glass designer, and Michael Savoya, architectural designer; until May 16 — Architectural League, 115 E. 40th St., New York City

23-25 The 25th Anniversary Confer-

ence, American Institute of Decorators — Sheraton Palace Hotel, San Francisco

23ff Part II, British Industries Fair (including building products); until May 4—Birmingham, England

OFFICE NOTES

Offices Opened.

Col. Sidney H. Bingham (Ret.), Consulting Engineer, has announced the opening of an office at 109 E. 35th St., New York 16, N. Y.

- Arthur Helman Cohen, A.I.A., has established offices at 739 Boylston St., Boston 16, Mass. He was formerly associated with the Boston firm of David J. Abrahams and Associates.
- Dana D. Corrough, A.I.A., has announced the opening of offices at 205 Lincoln Center, 6725 Pacific Ave., Stockton, Cal.
- Lee Lawrence, Architect, has opened his offices at 346 Charleston Ave., Worthington, Ohio.

Firm Changes_

- Beacham, Race, Beacham & Wood, Architects and Engineers, a new firm, has been formed by a merger of Palmetto Associates, Architects and Engineers, and Beacham and Beacham, Architects. Members of the firm include James D. Beacham, Architect; George W. Race, Engineer; Eugene W. Beacham, Architect; and Avery W. Wood, Architect. Offices are at 3 W. Lewis Place, Greenville, S. C.
- Joseph L. Donofro, Architect, has announced that James Harold Davis, Architect, has joined his firm as an associate. The firm is located at 208 N. Oates St., Dothan, Ala.
- Kelly & Gruzen, Architects-Engineers, announce that George Fred Pelham Jr.,
 A.I.A., has become an associate with the firm, which has offices at 80 Fifth Ave., New York City. Mr. Pelham was formerly a vice president of the Thompson-Starrett Co., general contractors.
- Walter Kidde Constructors, Inc., have elected Frank L. Whitney and E. G. Robbins vice presidents of the firm: Mr. Whitney will be vice president in charge of engineering, and Mr. Robbins will be vice president in charge of construction.
- Lawrence & Dykes, Architects, have made architects Kenneth J. Breting and Ralph A. Goodenberger associates in the firm, which will be known henceforward as Lawrence, Dykes & Associates, Architects. Offices are located at 125 Valleyview N.W., Canton, Ohio.
- David G. Murray & Associates, Architects, a new firm composed of David G. Murray, A.I.A., Lee C. Murray, A.I.A., and Robert Lawton Jones, has offices at 4232 S. Peoria Ave., Tulsa 5, Okla.
- Guy B. Panero Engineers, of New York, has announced the opening of two European offices: one at 39 Rue Cambon, Paris, the other at 6 Via Salandra, Rome.

(Continued on page 326)



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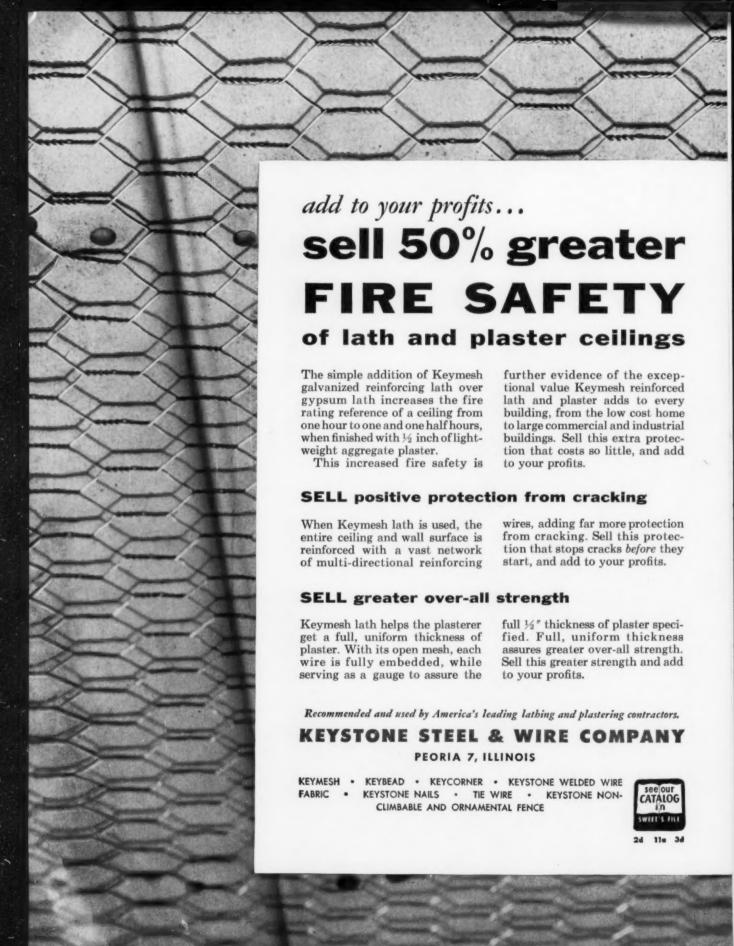
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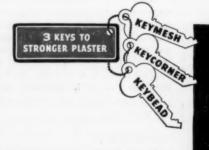


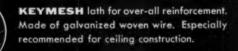
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KEYBEAD corner lath with precision formed bead for outside corners. Open mesh assures strong, solid plaster corners.

THE RECORD REPORTS

(Continued from page 322)

- Seelye Stevenson Value & Knecht, New York engineering firm, have elected John P. H. Perry as consultant. Mr. Perry recently served as Deputy to the Assistant Secretary of the Air Force.
- Sherwood, Mills, and Smith, Architects, have named Architect Gray Taylor a junior partner in the firm. Offices are at 65 Broad St., Stamford, Conn.

• William B. Tabler, A.I.A., has announced the opening of his architectural firm at 401 Seventh Ave., New York; Mr. Tabler was formerly associated with the Statler hotels. Other members of the new firm include John B. Robinson, David P. Dann, John C. Mayer and Eugene R. Branning.

New Addresses.

Anderson & Raymer, Architects, Boyd Bldg., 3 Gore Ave., Chilliwack, B. C., Canada

Cowell and Neuhaus, Architects, Suite

407, Old National Bldg., 5619 Fannin St., Houston 4, Tex.

Aloys Frank Herman, Howard Thos. Simons, Architects, 144 Lafayette Blvd. W., Suite 632, Detroit, Mich.

J. M. Huddleston, Architect, 1022 Creswell St., Shreveport, La.

Ralph J. Kramer & Associates, Mechanical & Electrical Engineers, 145 N. High St., Columbus 15, Ohio

Calvin McCormick, A.I.A., 2539 Addison St., Houston, Texas

Shampan & Shampan, Architects, 565 Fifth Ave., New York 17, N. Y.

Evan M. Terry, Architect, 2129 Montgomery Highway, Birmingham,

Clifford H. Warriner, A.I.A., 1651 Briareliff Rd., Atlanta, Ga.

WINDOW SIZING CITED AS ONE HURDLE FOR MODULAR

The persistence of discrepancies between stock window sizes and dimensions of modular masonry openings is described by William Demarest Jr., secretary for modular coordination of the American Institute of Architects, as one of the handicaps in the way of a wider acceptance of the whole modular program.

But Mr. Demarest points to some hopeful signs, especially the coöperation of some of the trade associations, including the National Woodwork Manufacturers Association, the Aluminum Window Manufacturers Association, and the Steel Window Institute.

With the passage of time and an increase in the construction of modular masonry buildings, the need for a variety of stock modular windows to fit these buildings is gradually being taken care of. Until transition has been completed, however, it is probable that architects will continue to order noncatalog sizes that do fit, at little or no premium, Mr. Demarest says.

Nearly a decade ago, modular masonry was available less widely than it is today. Formally approved American Standards set out what sizes were modular, what were not. No similar standards have yet been published to establish modular window sizes; so, Mr. Demarest notes, in the strict sense there can be no such thing as a modular window at present.

CORRECTION

Richard Kelly should have been credited as architectural lighting consultant for the house in Fairfield County, Conn., (AR, December 1955, pp. 152–157).

(More news on page 330)



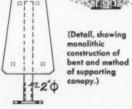
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George Bain Cummings, president, The American Institute of Architects, says, "This bonus issue might well have been entitled 'Architecture for the Good Life,' the theme of the 1956 convention of The American Institute of Architects. It so well illustrates our facet of that theme.

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OF 1956
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Twenty Architect-Designed Houses for Typical American Families. A ninety-page, highly visual presentation of America's best new houses. Text covers the client's requirements, the architect's reasons for designing as he did, and an appraisal of the architect's work by the owner. Each house will be presented for easy comparison with all others in terms of design solutions to similar problems.

Criteria for the selection of featured houses include: (1) economical design in the \$20-\$50,000 price range, (2) three or four bedrooms, (3) facilities for growing children, (4) widespread geographical distribution, (5) functional excellence, (6) beauty of form, texture and color, (7) average sites, (8) design by 20 different architects — with full recognition of great new design talent along with the best known including . . .

Anshen & Allen; Bolton & Barnstone; Marcel Breuer; Curtis & Davis; Ulrich J. Franzen; Charles M. Goodman; John MacL. Johansen; A. Quincy Jones and Frederick E. Emmons; Allen & Edwin Kramer; Richard Neutra; Nims & Brown; John Pekruhn; Paul Rudolph; Schweikher & Elting; Smith & Williams; James Speyer; Paul Thiry; William Wiener; E. H. and M. K. Hunter; Wurster, Bernardi & Emmons.



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In all, twenty-nine houses that will be a valuable tool for you to use with your clients to open their eyes (and minds) to good architectural design and to win their acceptance for house plans in which you can both take pride.



Products and Literature. A round-up of new residential building products, sectionalized by main product categories *plus* a comprehensive listing of *new* manufacturers' literature.

Shortly after publication "Record Houses of 1956" will be available to the house building public in bookstores across the nation. For the first time it will give this public a truly embracive picture of the best in house design. "Record Houses of 1956" will make a significant contribution to the growing public awareness of the advantages of good house architecture — and the determination of the typical American family to enjoy them.



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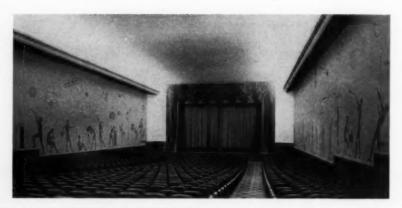
"workbook of the active architect and engineer"

THE RECORD REPORTS

(Continued from page 326)

DESIGN THEATER TO USE NEW PROJECTION SYSTEMS

The Carib Theater in Clearwater, Fla., was designed by architect James E. Casale of New York to incorporate facilities for "CinemaScope," three-dimensional and other new projection techniques. Acoustic properties of the auditorium were also a major consideration



Murals by artist Peter Cohen in auditorium (above) represent man's experiments with light and sound; (below) red and yellow Caribbeans on a blue porcelain enamel sea



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in view of recent developments in theater sound; i.e. stereophonic sound, which in this case required six speakers, three on either side of the auditorium.

The speakers are covered with perforated canvas painted beige to blend with the acoustic tile with which the walls are faced. The murals were done in green and coral oil, acoustically a rather inactive material, especially in the higher frequencies. The rear wall is composed of four in. of rockwool covered with damask; the ceiling is perforated acoustic tile.

The second floor of the building contains the projection room, a smoking room on each side of the projection room, the manager's office, ushers' dressing room and storage space. A parking area is located in the rear.

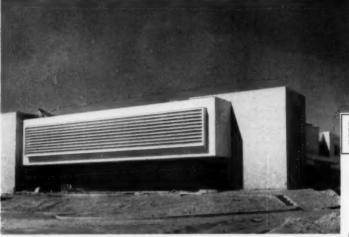
At the street level, the building has space available for store rental; the theater is designed as part of a commercial development.

The exterior of the building is buff stucco, trimmed with corrugated metal and stainless steel.

(Continued on page 332)



PANEL WALL CONSTRUCTION DETAILS...



Architect: Locatell, Inc.

Erie U-16 PANEL WALLS

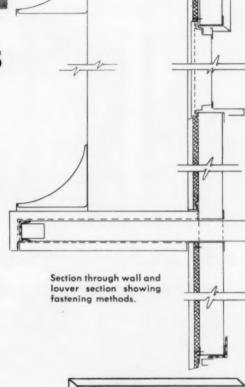
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- add permanent color
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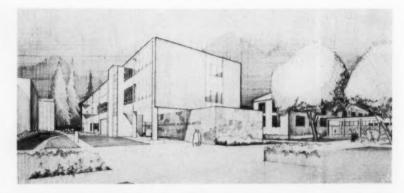


THE RECORD REPORTS

(Continued from page 330)

STUDENTS AT OREGON HELP DESIGN THEIR OWN SCHOOL

The design for an addition to the University of Oregon's School of Architecture and Allied Arts arose from a decision of the faculty of the school to use one of five designs done as a summer school project by advanced students. The Portland firm of Annan, Boone and



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Lei was appointed to complete the plans and to handle contractual arrangements for the building, which is now under construction.

The new three-story unit will house the school's architecture classes, while the old building will be completely renovated to accommodate the allied arts unit. A one-story sculpture wing (at right in rendering) will form a link with another part of the existing building.

One wall of the architecture building, shown in the rendering with a mural, will be an experimental wall for the exhibit of mosaic, ceramic tile and fresco work done by the students.



HILLEL FOUNDATION BUILDS FOR STUDENTS AT BROOKLYN

A new \$400,000 Hillel Foundation House has been proposed for the campus of Brooklyn College, and architect Percival Goodman's design would put a simple, contemporary building among existing buildings mainly Colonial in style. To harmonize with the older buildings, red brick will be used for exterior facing; the exposed steel columns will be painted white. Feeling that windows might be distracting to worship, Mr. Goodman suggested raised plastic skylights to light the chapel.

The building will have two wings, one containing the chapel and an auditorium, the other a game room and, on the first floor, offices. Other facilities will include a kitchen and a caretaker's apartment.



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THE RECORD REPORTS

WASHINGTON TOPICS

(Continued from page 44)

prepared to illustrate a possible approach to the question of what type of structure would best suit the need as outlined in a law passed by Congress and signed by the President last July 1. This law created the Federal commission "to formulate plans for the construction in the District of Columbia of a civic auditorium including an Inaugural Hall

of the Presidents and a music, fine arts, and mass communications center.

The sketches presented were prepared by Pereira & Luckman and represented a composite of the proposals earlier submitted to the coordinating firm by other members of the Board.

It was quickly decided that the center should be designed to serve the nation, somewhat as a shrine, rather than the local area. (Bills were introduced early in the present session of Congress to change the wording in the original Act from "civic" to "national" auditorium,

and to extend from February 1 to May 1, 1956, the date on which the first formal report to Congress is required.)

The January meeting stressed the desire, expressed by Charles Luckman, that the ultimate decision result in "something of a national shrine" which would at the same time fulfill the aims of Congress in a practicable and workable way. The Los Angeles firm presented a comprehensive analysis of cultural and auditorium facilities, both in this country and abroad.

Entirely new problems face the Commission with regard to finding a method of financing the project on a self-liquidating basis. Before any design work can begin, it must evaluate the claims of cultural versus commercial uses. No other center analyzed in the Luckman presentation faced quite this same question.

The initial meeting of the Commission with its Board considered possible inclusion in the center of theaters of adequate size for ballet, opera, drama, symphony orchestra performances and small recitals, as well as a much larger building suitable for indoor events in connection with such national ceremonials as the Presidential Inaugurations. An outdoor amphitheater also is being considered in connection with the center.

The nine tentative sites were analyzed as to area, ownership, assessment, existing land use, population, hotel locations, urban renewal study areas, transportation terminals, street thoroughfares, streetcar and bus lines, traffic flow, parking facilities and existing cultural facilities. Aerial views were examined. At least one of these early sites was within the area of the Southwest Redevelopment project as proposed by the New York realty firm of Webb & Knapp.

It appeared following the first meeting that the Commission would try to de-emphasize commercial aspects of the center as much as it possibly could while stressing the importance of the project as representing this country's prime cultural contribution to the world. It was noted that the nation's capital city now has no facility for cultural attractions such as are offered in Paris, Rome and other world capitals. The center here would be designed to serve first, all U.S. citizens (there are millions of visitors to Washington, D. C., annually); second, foreigners in this country; and third, the local community itself.

(Continued on page 336)

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THE RECORD REPORTS WASHINGTON TOPICS

(Continued from page 334)

The Commission also is considering facilities to house the American Collection of Fine Arts, which now has no permanent home. A mass communications center may be part of the over-all project, permitting transmission from the center by various media and transmission to the center of cultural events taking place elsewhere.

The Planning Board hoped to work the 20 proposals down to three or four within a matter of weeks after the early January session. These were to be submitted to the Commission, again with sketches. By May 1, when the Congressional report is due, a final single selection will have been made.

JETS AND AIRPORT DESIGN: SOME PROBLEMS DISCUSSED

If one definite conclusion resulted from a recent Washington, D. C., symposium on the influence of jet liners on future airports, it was that perplexing problems of runway length and strength and engine noise will have to be solved before 1959. That is the year that the giant jet transports now are scheduled to begin using America's airports.

About 125 persons representing aircraft manufacturers, airport operators, the airlines and the Federal government met early last month for an all-day discussion of the problems that were posed suddenly when several of the major airlines announced purchases of nearly \$1 billion worth of jets.

The meeting was not meant to reach conclusions, and no future symposiums on the subject were set. As one result, however, Civil Aeronautics Administration officials will confer with those having individual problems and the agency's engineers will continue to confer with manufacturers and airport officials on the specific difficulties the huge airliners will bring with them.

It was estimated that 9600-ft runways will be needed to handle the maximum-size new aircraft. And it was mentioned that the loaded weight of one of the giants is expected to approximate 300,-000 lb. In the light of these expectations it was agreed that there is no simple solution.

The symposium brought out questions of where the lengthened runways were to be located and the complexities of short and long haul needs.

(Continued on page 340)

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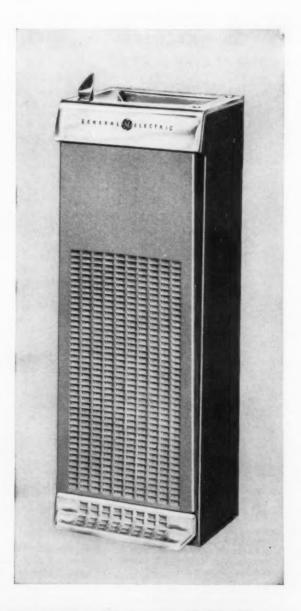
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WASHINGTON TOPICS

(Continued from page 336)

The 9600-ft estimate for runway length was based on sea-level and standard temperature conditions. When higher ground and temperature are considered, the problem really becomes complicated. It was said that 11,000-ft runways would be required in high temperatures, in and above the 90's. And requirements also rise as the altitudes rise. Denver, for example, would need a 15,000-ft strip, someone said.

The impact will not always be so extreme, however. The experts said that on shorter hops, such as from Washington to New York, or Chicago to St. Louis, fuel requirements being less, runway demands would not be as great. However, wherever international travel, or long-distance domestic travel is concerned, the questions of runway length and strength must be faced.

Other problems discussed included single versus multiple runways in each direction; damage jets inflict on runway, taxiway and parking stand areas; and just what airports could be served when the new equipment goes into service.

NEW FOCUS ON DISPERSAL URGED AS POLICY SHIFTS

The recent updating of the 1952 Project East River Report on civil defense matters would point Federal, state and local efforts in a different direction from that which they have taken in recent years.

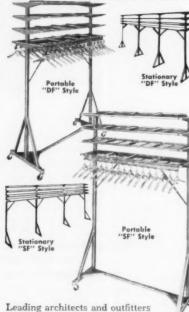
The significant shift in the new report lies in its broader concept of planning for defense of "metropolitan" target zones rather than individual cities, and in a more flexible interpretation of "dispersal."

Thirteen out-of-government leaders, chairmanned by Otto L. Nelson, Jr., vice president of the New York Life Company and a retired Army general, carefully reviewed the Project East River Report and concluded in a report submitted to Federal defense officials last month that it would not fit today's civil defense needs in view of stronger nuclear weapons.

The Federal Civil Defense Administration, the Office of Defense Mobilization, and the Defense Department took immediate steps toward effecting the metropolitan zone concept recommendations. FCDA listed the areas as New

(Continued on page 344)





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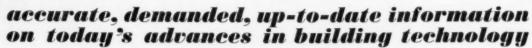
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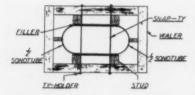




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WASHINGTON TOPICS

(Continued from page 340)

York, Chicago, Philadelphia, Washington, D. C., Boston, Baltimore, Cleveland, Detroit, Milwaukee, St. Louis, Buffalo, Atlanta, Los Angeles and San Francisco, including the Oakland area.

Shortly afterward, Director Arthur S. Flemming of the Office of Defense Mobilization announced a new Federal policy on dispersal of industrial plants. The new directive, embodied in Defense Mobilization Order I-19, calls upon Federal agencies to encourage and "when appropriate" to require that new facilities and expansions of existing facilities important to national security be located with a view to minimizing probable damage in case of attack. Plants located in "vulnerable" areas without heed to Federal advice will from now on be ineligible for tax concessions made to defense-supporting facilities or for Federal defense contracts or allocation of scarce materials.

Specific standards governing eligibility of plants for Government assistance will be drafted to implement the new policy by the Federal Civil Defense Administration and enforced by the Office of Area Development of the Department of Commerce. Meanwhile Order I-19 lists these considerations for the guidance of Federal agencies in applying the new policy:

- The most likely targets of enemy attack, such as certain military, industrial, population and governmental concentrations.
 - Size of such targets.
- The radius of blast and thermal effects.
- Inherent features of the facility, such as underground and built-in protective construction features.
- The degree of damage a facility could sustain and still remain operative.
- The presence of natural barriers that might provide additional protec-
- The economic and practicable requirements for efficient operation of the

The new approach set forth by Order I-19 replaced the less flexible former "policy" - honored mostly in the breach - which set up a "mileage" standard for dispersion.

The Nelson committee report noted no serious attempt had been made to bring about reduction in urban vulner-

(Continued on page 346)

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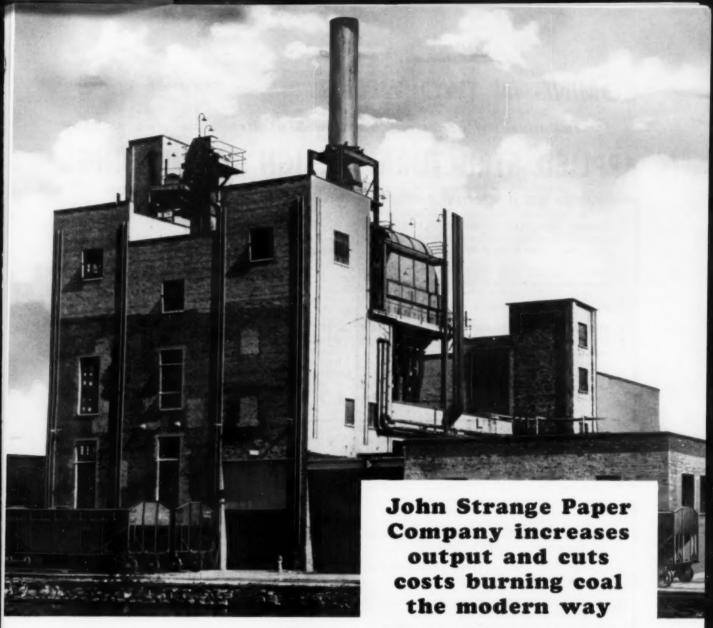
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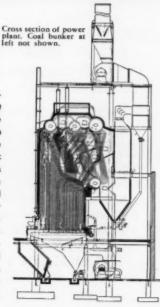


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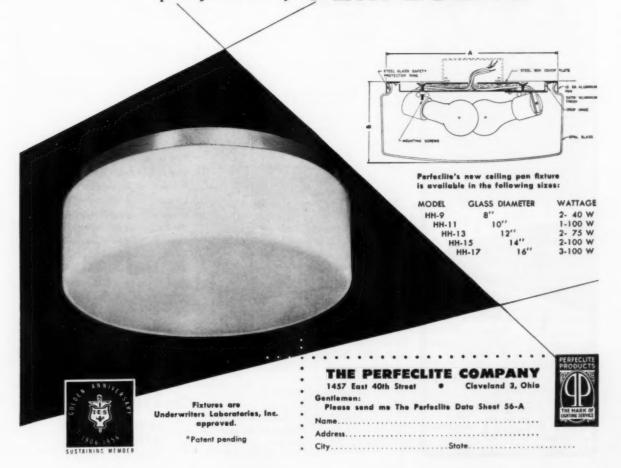
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THE RECORD REPORTS

WASHINGTON TOPICS

(Continued from page 344)

ability as recommended by Project East River. That report (AR, February 1953, page 16) called for (1) protection by spacing and distance; (2) protection by improved construction standards, including shelter areas; and (3) protection by better close-in military defenses of highly concentrated areas.

Except for the third item, action must come at the metropolitan level, the Nelson group stressed. But it added: "If localities are to do the main job, the Federal government must take positive steps with respect to dispersion, giving badly needed general leadership by setting an example in new Federal construction as to what should be done."

The committee urged that the Federal government contribute substantially to the broader aspects of the reduction of urban vulnerability through development of standards and incentives. In each case, it argued, application must be accomplished locally, with consideration given to the geographic and other peculiarities of the metropolitan zone. The close relationship of industrial location and population density becomes important.

The Nelson committee would not abandon the East River study by any means. Instead, it would base a new approach to solutions of these problems on the old findings. By working through a target zone non-military defense plan for successive years, the committee said, it should be possible to stimulate the construction of circumferential highways that would then induce spreading out and reduction of population densities. The same is true for industrial facilities, it believes.

An added thought: "Proper application of policies that could be adopted by the Housing and Home Finance Agency could do much in the area of slum clearance to reduce high population densities in the centers of large cities and to reduce land coverage and population density in new multiple dwelling rental housing built through the medium of FHAinsured mortgages." Such indirect methods need to be found which are politically and economically acceptable, the report advised.

The Nelson committee review carried these recommendations:

1. A determined and sustained effort needs to be made to promote Federal leadership in the reduction of urban (Continued on page 352)

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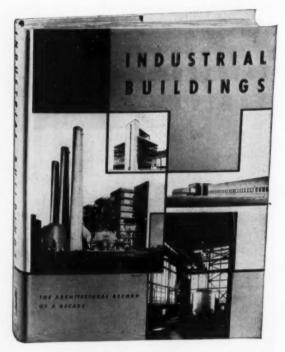
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THE RECORD REPORTS

WASHINGTON TOPICS

(Continued from page 348)

vulnerability as outlined in Part II-B of the Project East River Report. To date, very little along this line has been either attempted or accomplished.

2. Leadership in the field of industrial dispersion is essentially a Federal responsibility. The work of the Office of Defense Mobilization in analyzing key industries to uncover undue concentration in any one locality should be continued with the goal that within the next 10 years a reasonable minimum and properly balanced portion of our total national production with the necessary accessory facilities therefore be established outside of metropolitan target zones. Thirty per cent has been suggested, but it is acknowledged that this standard obviously needs testing, and any standard will probably require frequent modification with the passage of time. In these programs, the committee advises emphasis on the location of new facilities in order to accomplish the

3. The non-military defense plan for each of the metropolitan target zones should include a section devoted to the reduction of urban vulnerability along the lines suggested in Part V of the Project East River Report. The standards therein can still be used as broad general guides, but altered to fit the peculiar geographic and other circumstances of a given metropolitan target zone. Emphasis should be given to such positive indirect measures as circumferential highways; utility extension; park, forest, wild life, and greenbelt projects; and slum clearance programs that can get strong local support and that will indirectly promote the reduction of urban vulnerability. Action at the Federal level will be needed to obtain favorable consideration from the many Federal agencies involved for the locally prepared and locally approved programs.

The Nelson report complained that the Federal dispersion program has been far too limited, confined largely to military and military-supporting industry. It recommended more emphasis on these production facilities concerned with basic items needed for rehabilitation of the civilian economy and for re-establishment of the entire economic structure. Dispersion, it urged, must be applied in a much broader sense.



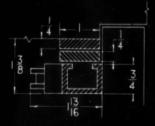
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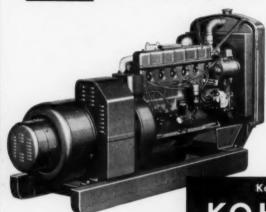
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The Minnesota Mutual Life Insurance Company's new office building on Victory Square in St. Paul is a handsome 8-story building of native Minnesota stone topping a black granite base. A particularly striking lobby features large areas of glass and a variety of woods. A colorful mural, depicting various episodes in the state's history, is a main feature of the lobby. More than 1000 tons of Bethlehem Structural Shapes were used in building the new office, which contains about 119,000 sq ft of usable floor space.

Architects: Ellerbe and Company; General Contractor: Wm. Baumeister Construction Company; Steel Fabricator: St. Paul Structural Steel Company. All are St. Paul firms.

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AMERICAN SCHOOL PREFABS

(Continued from page 219)

bids had been accepted, while eight comparable schools cost from \$905 to \$1600 per pupil.

The National Homes school at Lafayette, Ind., has been criticized for its natural lighting (upper glazed areas are frosted glass which, even on north exposures, refracts light specularly, causing intense glare); for its lack of through ventilation; for the quality of its heating units and of construction generally. It is truly prefabricated, with a minimum building unit of two-classroom size.

The Structo school, we are told, offers a prefabrication system composed of standardized materials available on the open market, in a well-designed fourclassroom-plus unit; and it can be obtained in several appealing ways: conventional purchase, lease-purchase, or long-term lease. A serious criticism has been the large size of the building unit. Structural quality is said to be high, but using the prefabricator's figures the cost, on the basis of initial or annual charges, might in various localities be greater than the first cost or annual charges for conventional designs of comparable quality and efficiency.

In evaluating any school structure it should be remembered that cost cannot be directly compared from one region or specific site to another, from one day to the next or between architects. We in the United States do not have the cost controls available to the British. True cost must include the expense of maintaining inferior materials and finishes, and of such items as equipment, site work and foundations not covered by the prefabrication contract though normally included in custom-designed schools. True cost has to be measured in terms of value received, as to quality of required areas and cubic content, heating, ventilation, fire safety, illumination, plan organization, esthetic values, etc. The price of increased maintenance is almost inevitably a reduction of several or all of these qualities.

There are several more American examples of prefabricated schools and a vast number of standardized products are available. More are sure to be developed. When a system of components comes on the American scene that makes the most of each material's virtues, permits reasonable freedom of design according to a client's needs, and does not increase cost either long-term or immediate, it will be welcomed with open arms.





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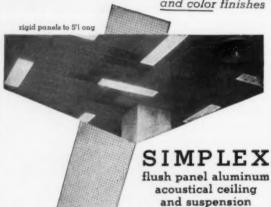


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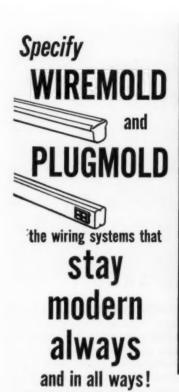


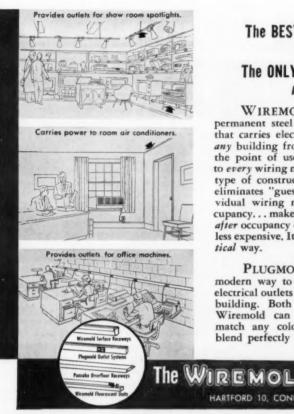
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REQUIRED READING

(Continued from page 62)

comes, as Wright came, to a kind of anti-intellectualism. This seems to me an inevitable process, one taking place quite widely today in an effort to right the overbalance of rationalism in the last quarter-century, and to oppose the living, creative forces of the past and of today to the specialization and academicism of today.

Italy is rich in folk values that are fully exploited in Kidder Smith's book. His Italy is a vital and romantic place, teeming with life, bright colors, strong light, profuse vegetation, a panorama of architectural effects and even oddities which often seems more like a touristic than an architectural scene. This is announced by a few words on the relation between Italian sites and buildings, the "working-togetherness of manscape and landscape, of stone mined and unmined, of trees planted and natural, of waters tamed and wild, which can be an inspiration to us in having nature work for us." But Kidder Smith is most impressive when he evokes the spirit of the Italian piazzas. He is not indifferent to Renaissance formalism or Baroque spatial dynamics, but it is the spirit of the picturesque (even within the classic) which is summoned. By what other standard could Capri's Piazza Umberto I, that 65- by 100-foot pocket handkerchief of space, with all its dramatic compression and intensity of human contact. be called "the most successful piece of town planning brilliance to be found in Italy?" The sympathetic analysis of Siena's Piazzo del Campo certainly shows the author at his best in dissecting the significance of the hill town squares. the one which indeed should make the strongest appeal to his own esthetic. These are some of the delights in Italy Builds. Had historical balance and rationality not intervened, Italy Builds might have been a more personal and forthright book, one which might have emphasized minor Venice even at the expense of the Piazzo San Marco, which would have ignored Turin altogether. and which would have described with tenderness and insight not only the trulli of Alberobello but the caves of Matera and the other wonders off the beaten track in Basilicata and in more remote parts of the peninsula.

As it is, the fulfillment of Kidder Smith's architectural impulse is found less in history than in his treatment of modern architecture, and its culmination in the structural expression of Pier (Continued on page 364) THE
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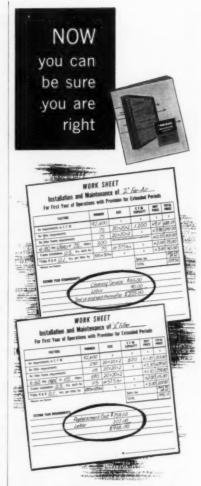
(Continued from page 360)

Luigi Nervi's industrial architecture. Modern Italy abounds in vitality and experiment even more than in architectural piracy. The new political freedom, the absence of immediate tradition, the shifting, tensioned ideological situation have created a stimulating architectural climate, yet one which invites and even seems to reward responsibility. Many of Italy's most thoughtful observers feel deeply the need for system, principle, doctrine that are found among the most gifted architects. To such, a figure like Ernesto Rogers is an Old Bolshevik, a libertine. The new architectural freedom has flourished in the Milan region, and its tendencies have been expressed best in exhibition structures and designs. Yet they are found equally in the design of shops, sports facilities, and buildings where display and individuality are desired characteristics. Kidder Smith's selection from the wealth of modern Italian architecture emphasizes these categories of buildings, and even his choice and treatment of housing. markets, industrial buildings and similar types is influenced by this emphasis. The result is a spirited review, of not one altogether representative of the major movements of Italian architecture.

Kidder Smith's hero of modern Italian architecture is Nervi, the creative engineer, the bold expressionist in reinforced concrete. The pioneer aircraft hangars, the exhibition hall at Turin, the salt warehouses at Tortona, the tobacco warehouses at Bologna, are given special attention. Always the emphasis is on the biological drama of organic structure, particularly the great ceiling spans. It is possible that in our industrialized architecture works like this express a new vernacular, and one regrets that the author did not explore such an analysis.

In his effort to get closer to architecture with the camera, Kidder Smith has not thrown away the tripod but he has resorted increasingly to the Rollieflex and other hand cameras to document the interaction of people and architecture. His development as a photographer is still away from those heavily filtered, dramatic black-and-white shots which emphasize the monumental characteristics of buildings. Perhaps these were as appropriate to Brazil's architecture as they were to her equatorial light. But they were also the hallmark of the photos Kidder Smith took of Navy construction while on active duty, pictures which emphasized the monumental

(Continued on page 368)



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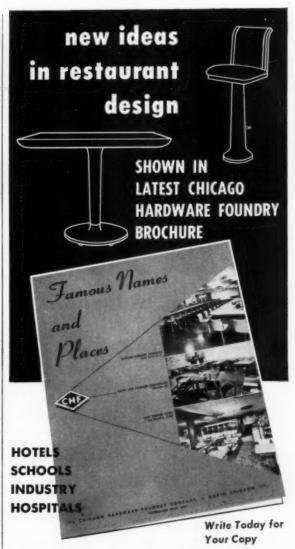
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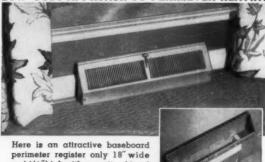
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REQUIRED READING

(Continued from page 364) nature of dry docks, tank farms and other heavy engineering structures. But the distinctive element of his develop-

ment is the increasingly successful effort to translate the new humanism of postwar architecture into photographic terms. This was an appealing feature of his books on Sweden (commenced in 1939 but not published until 1950) and Switzerland, and it has been notably

advanced in Italy Builds.

Sweden Builds is an immature book in the sense that the subject dominated the author. It is more of a survey; ideas are suppressed. Yet the underlying conception of the book so emphasizes the comprehensive nature of architecture that the problem of selection must have been a formidable one, and one is hardly surprised that 11 years elapsed between its conception and its publication, or that the author made four trips to Sweden before it was completed. In the end the result was superb. The historical section was a splendid recapturing of a neglected chapter in world architecture. Its relevance to contemporary work is cogently presented. The transition from history to modern work is made without awkwardness. In the handling of individual buildings and projects an excellent balance is struck between the larger issues of general planning and the specific description of structural details, equipment and design. In the lavish presentation which Bonnier's gave this volume one seems to see through the photographs to the subjects themselves, but the emphasis is still almost wholly "architectural." The total effect of the book tends to be established by the treatment of individual buildings, and what one remembers is the Karlskoga town hall, or some other item rather than the context in which the author attempted to put it.

By contrast, and despite the fact that it deals with a land geographically and culturally far less unified, the author's Switzerland Builds makes it impossible to think of a single building without remembering first that it is Swiss, without thinking of its relevance to all the other buildings in this survey, past and present, and to the landscape. The historical sections are handled with authority, dramatic clarity, and at a brisk pace. In the modern section the author is as successful in avoiding the deadends of stylistic discussion as he was earlier in escaping the mawkish sentimentality and cast-iron wedding cakes of the Swiss.

(Continued on page 372)



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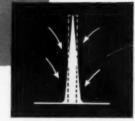
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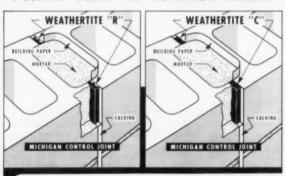
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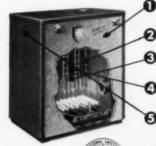
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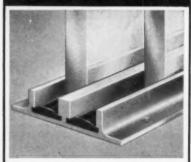
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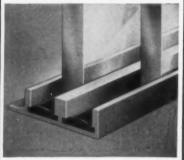
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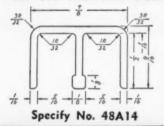
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(Continued from page 368)

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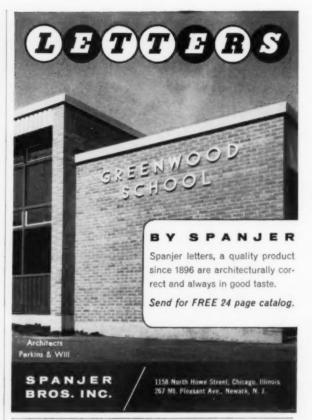
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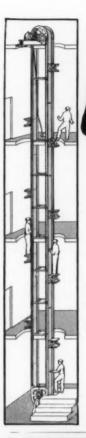
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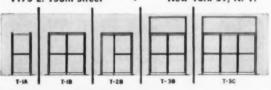
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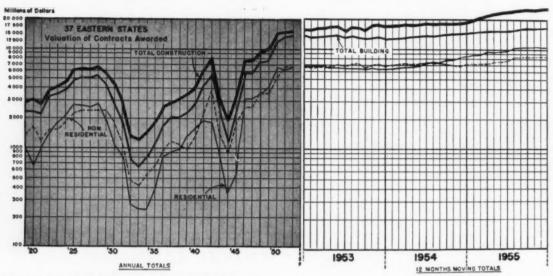
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City		
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THE RECORD REPORTS: CURRENT TRENDS IN CONSTRUCTION



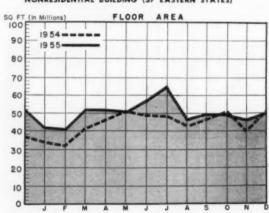
1955 TOTAL TOPS 1954 BY 20 PER CENT

The size of the long-apparent 1955 construction record became known last month when F. W. Dodge Corporation announced the December totals of construction contracts awarded in the 37 states east of the Rockies. The year reached the all-time high total of \$23,745,277,000, 20 per cent above the previous record high set in 1954; it was the tenth successive year of new record volumes, and compared with 1954's 13 per cent gain over 1953. The 1955 total set new all-time records in all three of the basic Dodge classifications: nonresidential construction, at \$8,496,829,000, was 19 per cent above 1954; residential, at \$10,185,259,000, was up 20 per cent (and above the \$10 billion mark for the first time in Dodge history); heavy engineering, at \$5,063,189,000, rose 22 per cent. The month of December itself, with a total of \$1,920,754,000, set a new record for the month, five per cent above December of 1954. F. W. Dodge vice chairman Thomas S. Holden noted that all three major classifications showed nearly equal percentage gains over 1954 and remarked that "the nation's 1955 construction program as a whole was a better rounded one than that of the previous year."

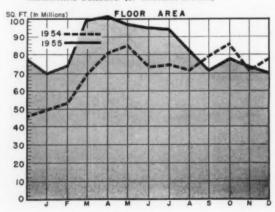
				Sou	rce: F. W.	Dodge !	Corporation
			NDUSTRIAL	BUILDIN	GS *		
	(Contre	acts Awarded	-37 East	ern State	es	
	V	alva	tion (in the	usands a	f dollar	s)	
	Anns	al	Monthly		Ann	wal	Monthly
Year	Tota	ıt	Average	Year	Tot	al	Average
1929	545,1	362	45,489	1949	558	,599	46,550
1935	108,	359	9,072	1950	1,142	,298	95,191
1941	1,181,	523	98,460	1951	2,883	,321	240,276
1944	472,	559	39,388	1952	2,558	,134	213,177
1946	1,317,	256	109,771	1953	2,051	,390	170,948
			Monthi	y Totals			
	19	54			19	55	
Jan.	110,898	July	107,992	Jan.	84,822	July	145,904
Feb.	106,338	Aus	93,157	Feb. 1	12,991	Aug.	169,844
Mar.	79,993	Sep	t. 159,713	Mar. 1	75,515	Sept.	200,675
Apr.	93,516	Oct	. 144,503	Apr. 1	42,403	Oct.	185,901
May	86,036	No	. 81,608	May 1	70,879	Nov.	177,662
June	106,827	Dec	. 103,514	June 1	63,475	Dec.	147,496

Charts by Dodge Statistical Research Service

NONRESIDENTIAL BUILDING (37 EASTERN STATES)



RESIDENTIAL BUILDING (37 EASTERN STATES)





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Length	S		i		5	f to	1	8	in	6	" i	ncr	em	ent
Sheet	thi	ck	ne:	3.8			+					. 6	0.0	40"
Sheet	wi	dti	h						41	1/8		(a)	ppr	OX.
Cover	ag	e					3	9"	(8	0	OFI	าบดู	ati	ons
Pitch													4	1/8"
Depth									,				1	34"
Top a	nd	ь	otte	om	fle	ats								34"
Finish							1	Stu	ccc	0	E	5 p	att	ern

MAXIMUM SAFE LOADS

(Safety factor of 2)

(Safety to	icior of 2/
Purlin or Girt Spacing	Load (1b pe square foot
10'-6"	21
10'-0"	23
9'-6"	25
9'-0"	28
8'-6"	32
8'-0"	36
7'-6"	41
7'-0"	47
6'-6"	55
6'-0"	65
5'-6"	78
5'-0"	95
4'-6"	118

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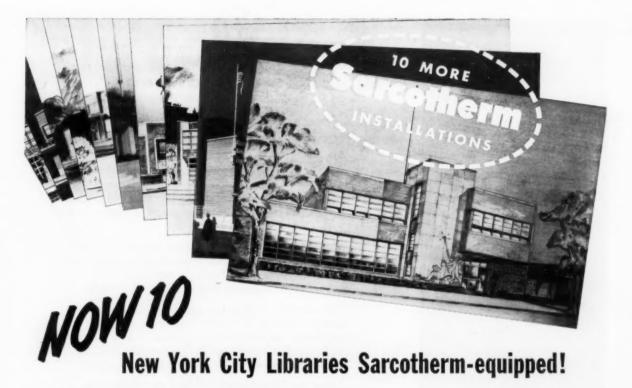
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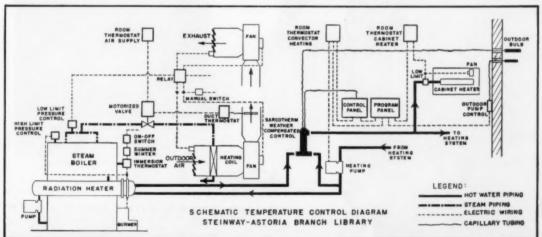
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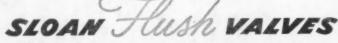
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